MARINE REVIEW.

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Technological Schools and the Naval Engineer Corps.

The bill for the re-organization of the naval engineer corps, Senate Bill 735 and H. R. 3,618, has been already referred to in the columns of the REVIEW. Of the various features involved, none is of more general interest than that relating to the opening of the corps to the graduates of technological schools, and the strengthening of such schools by the detailing of engineer officers as professors of marine engineering, and by the loan of models, drawings, and educational equipment. What is proposed, in brief, is that graduates of technological schools of the United States whose course of instruction in mechanical engineering may be considered satisfactory to the director-general of naval engineering and approved by the secretary of the navy, may be eligible for appointment as engineer cadets in the engineer corps of the navy. The details of the method of making the appointment need not be here considered. It will suffice to state that such graduates upon passing a physical examination may be assigned to cruising ships for one year, and at the end of that time will spend a further year in the various navy yards or at such post graduate schools as may be established for completing their training in preparation for the final examination. They will then at the end of their two years post graduate training come into competition with each other and with the graduates of the naval academy for appointment to fill the existing vacancies in the grade of assistant engineer.

Having thus briefly outlined what is proposed to be done, let us note the reason for such action. The need for more naval engineers has been already discussed in these columns, and in fact is well understood and admitted on every hand by those who have given the matter any attention. We may therefore take this point as granted at the start. Now the history of the past few years shows that enough men to increase in any reasonable time the corps to the necessary numbers can not be drawn from the graduates of the naval academy. Under the conditions contemplated by the bill, therefore, the supply will not be sufficient to properly meet the demand, and to turn elsewhere is simply a necessity of the situation.

Now there are throughout the country a large number of technological schools for the training of mechanical engineers in the broad sense. But the marine or naval engineer is simply one of the wide fraternity of mechanical engineers. He has necessarily to give special attention to certain sides of the profession, but the fundamentals are the same for all, and the special part of the training will come readily enough with good foundation and training in the broad essentials. It would therefore seem the most natural thing to make use of this vast plant for general engineering training spread all over our broad land, and to offer some inducement for the provision of courses specially related to marine engineering. Such is the purpose of this bill. It will naturally be to the advantage of any institution proposing to train men with a view of entering the naval service to establish courses relating to marine engineering, and it is to aid in this direction that provision is made for the detail of engineer officers as teachers in such schools, and also for the loan of models, drawings and illustrative material. The arrangement thus proposed will be of the greatest mutual benefit. Any bright young man by fitting himself in such a school may aspire to a position in the naval engineer corps. The work of such schools will thus be stimulated and aided, and there will naturally be brought to bear on the problems of marine engineering a vast amount of fresh attention all over the country. On the other side, the government will have its pick of a large number of young men without having had to bear the cost of their education. The service at large also can not fail to benefit from the large amount of interest and attention which the general subject of marine and naval engineering will thus naturally attract.

Still another advantage to the government and to the country at large would be in the large educated reserve which would gradually accumulate. Many would aspire to appointment, but naturally not all can be successful in the final competition. Those who do not thus gain a permanent position in the naval service will naturally turn their attention to whatever may most attractively present itself, doubtless many of them in similar lines of work in private ship yards, etc. In any event, there will thus grow up a gradually increasing number of young men available for service in the navy in case of a sudden call for an increase of numbers, and yet in no way drawing their support from the government. The great value of a large fund of this character on which to draw in time of need is hard to overestimate.

Another feature along the same line of educational and scientific development is the proposed establishment of a marine engineering experiment station at New London. The need of such a station, and its possibilities for good, have been pointed out by Past Assistant Engineer F. J. Bieg, U.S N., in a paper published in the Journal of the Society of Naval Engineers for August, 1895, and by a number of others in the attendant discussion. Every marine engineer is constantly faced by questions to which experiment alone can give a reply, and he necessarily works within a region of uncertainty, wider or narrower as conditions may determine. To answer some of these questions and to narrow the boundaries of this region of uncertainty would be the work of this experimental station. To the government alone such knowledge would very quickly pay for itself, and when we add to the public interests those of private builders and owners all over the country, the wide-spread value of such a mine of engineering information may be clearly seen. It would be hard in fact to find a way in which a moderate amount of money could be more wisely and advantageously expended than in thus adding to the available store of practical information relating to so important an art as that of marine engineering.

These various educational features are all provided for in the bill referred to, and it is not too much to say that they make of it, in addition to its other features, a measure of the highest educational importance; a measure in accord with the growth of scientific engineering, and one which should receive the hearty support of all who are in sympathy with the further development of industrial and scientific engineering in the United States.

Lake Freight Matters.

Although daily meetings have been held by the ore dealers during the past week, they are not as yet ready to announce prices, nor will they be for several days to come. Everybody is still of the opinion that prices will be about $1 a ton higher than they were a year ago, and it is quite generally understood that just now the ore men are cutting down percentages of allotment, leaving room for an increase to the various companies if conditions in the iron market improve later.

In the meantime vessel owners are discussing conditions which should prompt them to refuse $1 as the rate from the head of Lake Superior. It is more than probable that labor demands will cause an increase in both trimming and unloading charges. But the matter upon which vessel owners place most stress is the draft of water from Lake Superior. There is certainly little indication of any improvement in water next season. A telegram to the REVIEW, under date of March 19, from the canal officials at the Sault says: "The present depth of water on the lock platform is 14.6 feet. Water will probably be one foot lower by May 1. The water has been four-tenths of an inch lower this winter than last." This would certainly indicate little improvement in water during the coming season. The engineers express the opinion that increased snow fall may make the stage of water during the coming season about two-tenths of an inch higher than it was last season, but this is only a probability and at best would be but a fractional gain.

Coal dealers of both the Pittsburg and Hocking valley districts will meet in Cleveland, Saturday, with a view to making final arrangements in a pool to govern prices and output of lake coal. Most of the dealers seem to think that the scheme now on hand will be carried out. No coal has been sold as yet, but two or three of the dealers who are willing to speculate on freights have offered large blocks of coal to vessel owners at 40 cents to the head of the lakes. These offers have not found takers but the shippers will not as yet pay 45 cents.

Duncan Fraser, as chief engineer, and E. M. Smith, Clint Ennis and R. E. Burns, as masters, are among men selected for steamers of the Rockefeller fleet. Capt. Smith was last year in one of the Northern line freight steamers, Capt. Ennis was in the Lansing and Capt. Burns was in the St Lawrence. No commodore for the fleet has as yet been selected. Mr. Rockefeller has actually bought two of the whaleback tow barges to tow with the Pillsbury and Washburn. His acquirement of all four of the whalebacks is by purchase and not charter.

Blast furnace statistics prepared on March 1 show that the current production of pig iron has declined from 217,306 tons per week on Nov. 1, 1894, and 198,599 tons per week on Feb 1, 1895, to 189,583 tons. An increase of 69,764 tons in stocks is also reported during the month of February. This would indicate the necessity of a curtailment of production if a decline in prices is to be averted, but it must be noted in this connection that the present is the dullest period of the year.

Rafting Regulations.

A CONCISE STATEMENT OF THE STAND WHICH VESSEL OWNERS WILL TAKE IN CONGRESS—DRAFT OF RULES PRESENTED TO THE RIVER AND HARBOR COMMITTEE.

Executive officers of the Lake Carriers' Association have agreed upon the position which they will take before the river and harbor committee regarding the regulation of raft towing on the lakes. Secretary Keep and Mr. Harvey D. Goulder have been at work on this matter for some time past, and Hon. Wm. P. Hooker, chairman of the river and harbor committee is now in possession of the regulations proposed by the vessel owners. It will be remembered that the river and harbor bill passed by the Fifty-third congress contained regulations that were based upon the recommendations of a board of army engineers, appointed to consider the subject of raft towing on the lakes. Gen. Alger of Detroit, who is the principal representative of the raft towing interests, succeeded by very shrewd work in the senate, during the closing days of the session, in killing the entire action of the house on the subject. Another river and harbor bill is now being considered in committee, and the Lake Carriers' association has again taken up the fight. Some concessions have been made and it is thought that the matter can be amicably settled in the present congress.

In the brief submitted by Mr. Hooker, the hearing before the committee in the Fifty-third congress is revived. The vessel owners contend that in the hearing before that committee the necessity for restrictive legislation of rafts was not only shown by the vessel interests but admitted by the raft interests. "As to the form of the required legislation," says the brief, "we do not understand that there is any serious difference between the two interests, except in the single matter of the permissible dimensions of rafts. The Lake Carriers' association contends, and has always contended, that all restriction of raft towing is useless unless the rafts are reduced to manageable size. General restrictions requiring rafts to give up half the channel to vessels etc., are of no value unless the law shall reduce the size of rafts to such a degree that they can be at all times kept in control. We believe that the raft towing interests have always used their very best endeavors to intrust their rafts to competent men. We believe that their captains are men of excellent judgmeut and a high degree of skill, and that they have always done the very best that could be done with the rafts placed under their charge. The trouble has been solely due to the fact that the rafts themselves were so large that it was impossible, with the best intentions and the highest care and skill, to take them through the narrow, crowded and difficult channels of the rivers connecting the great lakes, without imperiling, obstructing and delaying vessels, adding greatly to the number of collisions and groundings, removing channel marks, and materially increasing the dangers and risks of navigation." Then follows the proposed regulations, which are presented herewith:

"It shall be the duty of every vessel towing a raft on or through the rivers connecting the great lakes, or on or through the channels, harbors or rivers connected with the great lakes, to give at least half the channel way, wherever the width of the channel will permit, to vessels passing in the same or in opposite direction, and each failure to thus give way, when practicable, shall constitute an offense, punishable as hereinafter provided for. It shall be the duty of every vessel having a raft in tow on or through any of said waterways to avoid running over or against govment buoys, stakes or other channel marks either with the towing vessel or the raft in tow thereof, wherever and whenever practicable, and the willful destruction or displacement of any of said buoys, stakes or other channel marks shall constitute an offense, punishable as hereinafter provided for. In case of the unavoidable destruction or displacement of any of said buoys, stakes or other channel marks it shall be the duty of the master or other person in charge of said towing vessel to report the facts to the lighthouse inspector of the district by telegraph, if posslble, and if not possible, then by mail or otherwise at the earliest possible moment.

"When any vessel and its tow of logs in bag or sack rafts are obliged by stress of weather to take refuge between entrance piers, or in any narrow channel of a river or harbor, the burden of proof as to the necessity of so taking refuge being upon the towing vessel, said raft shall be at once reconstructed so as to leave at least half of the channel clear, and the whole raft shall be moved as soon as possible out of the way of passing vessels. Each and every period of twenty-four hours after the first twenty-four hours that said raft shall be left in shape to obstruct navigation, shall constitute a separate offense, punishable as hereinafter provided for.

"Raft towing through either the Hay Lake channel or the St. Clair Flats canal shall be entirely prohibited under penalty as hereinafter provided for.

"On the St. Mary's river between Sault Ste. Marie and the head of Mud lake, at a point two miles below the Encampment crib light, bag or sack rafts shall not exceed 600 feet in length and 60 feet in width; they shall be securely fastened by cross ties, or otherwise, to preserve as far as possible a uniform width; each raft shall be handled by not less than two tugs of sufficient power to keep the raft under control and to move it to one side of the channel sufficiently to permit vessels to pass. Each failure to comply with this restriction shall constitute an offense punishable as hereinafter provided for. (In explanation of the foregoing section officers of the Lake Carriers' Association say to the committee: No crib rafts are towed through the St. Mary's river. The dimensions specified above for bag rafts in that river are the dimensions named in the original report of United States engineers on this subject. We do not think that any larger rafts than these should be allowed in the river. We beg to call your attention to the practice of rafting in the St. Mary's river. Enormous bag rafts are brought down Lake Superior and into the St. Mary's river to a point just above the rapids and the Sault. Here the boom surrounding the raft is opened and the logs are permitted to pass down the rapids, and are caught in a boom below the falls. The large raft is then broken up into smaller rafts and taken down the river in sections to Mud lake, where it is again put together for towing across Lake Huron. You will observe that the vessel interests in no manner seek to restrict the size of rafts either above the Sault or below Mud lake. All they ask is that when the raft is broken up into sections to be taken down the difficult portion of the navigation between the Sault and Mud lake, the number of sections shall be increased over the practices formerly prevailing, and the size of each section shall be diminished, so that the raft can be controlled, and the great dangers which attend the navigation of the river at all times shall not be increased by obstructions which occupy the entire channel and are not under control. If the sections are made smaller it will take a little more time to take the logs from the Sault to Mud lake, and will cost the owners of the rafts a little more money. The necessity of the case appears to justify the restriction, and the size named—which is that prescribed by Gen. Poe and his associates, men who were thoroughly familiar with the local conditions, and entirely unbiased as between the vessel owners and the raft owners—is believed to be just and reasonable.)

"On the St. Clair and Detroit rivers crib rafts shall not exceed 135 feet in width and twenty cribs, not including the usual nose piece, in length. Each failure to comply with this restriction shall constitute an offense punishable as hereinafter provided for. (In explanation of this paragraph the vessel owners say to the committee: Gen. Alger stated to you that he was willing to restrict the size of his rafts to six cribs in width. He also stated that the width of a crib in actual practice was 22 feet. The dimensions above named will permit him to tow rafts six cribs wide and twenty cribs long.)

"All bag and sack rafts which shall be towed from Lake Huron into the St. Clair and Detroit rivers, shall, when the weather permits, be narrowed up and held in shape by cross-ties or ropes to a width not exceeding 150 feet, before entering the St. Clair river; when the weather will not permit this narrowing to be done before entering the river, such rafts shall be permitted to enter the St. Clair river, and in that case they shall stop at some convenient point above..... and the raft shall there be narrowed up to the width aforesaid, and securely fastened by cross ties or ropes so as to preserve, as far as possible, a uniform width not exceeding 150 feet. Below.....bag and sack rafts on the St. Clair and Detroit rivers shall not exceed 150 feet in width and 1,200 feet in length, and each raft shall be handled by not less than two tugs of sufficient power to keep the raft under control, and to move it to one side of the channel sufficiently to let vessels pass, and each failure to comply with this restriction shall constitute an offense punishable as hereinafter provided for. (In explanation of this section the vessel owners say: The dimensions above fixed for bag or sack rafts in the St. Clair and Detroit rivers are larger than those which the United States board of engineers fixed as the maximum. A bag or sack raft is less manageable than a crib raft of long timber. In conceding a width of 150 feet and a length of 1,200 feet we are conceding a great deal. We do not think it practicable to permit a larger raft than this to pass down the St. Clair river with its sharp bends and very dangerous navigation.)

"For the willful violation of any of the foregoing restrictions, the towing vessel shall be liable to a fine of not less than $100 and not more than $1,000, and the master or other person at the time in charge of the towing vessel shall be imprisoned for not less than one month and not more than six months for each offense, at the discretion of the United States court having jurisdiction; and in addition to the penalties thus imposed the towing vessel shall be liable in civil action for damages occuring as a result of said willful or negligent violation of these regulations."

NOTE.—Point where vessel owners desire rafts narrowed up after entering St. Clair river has not as yet been definitely fixed.

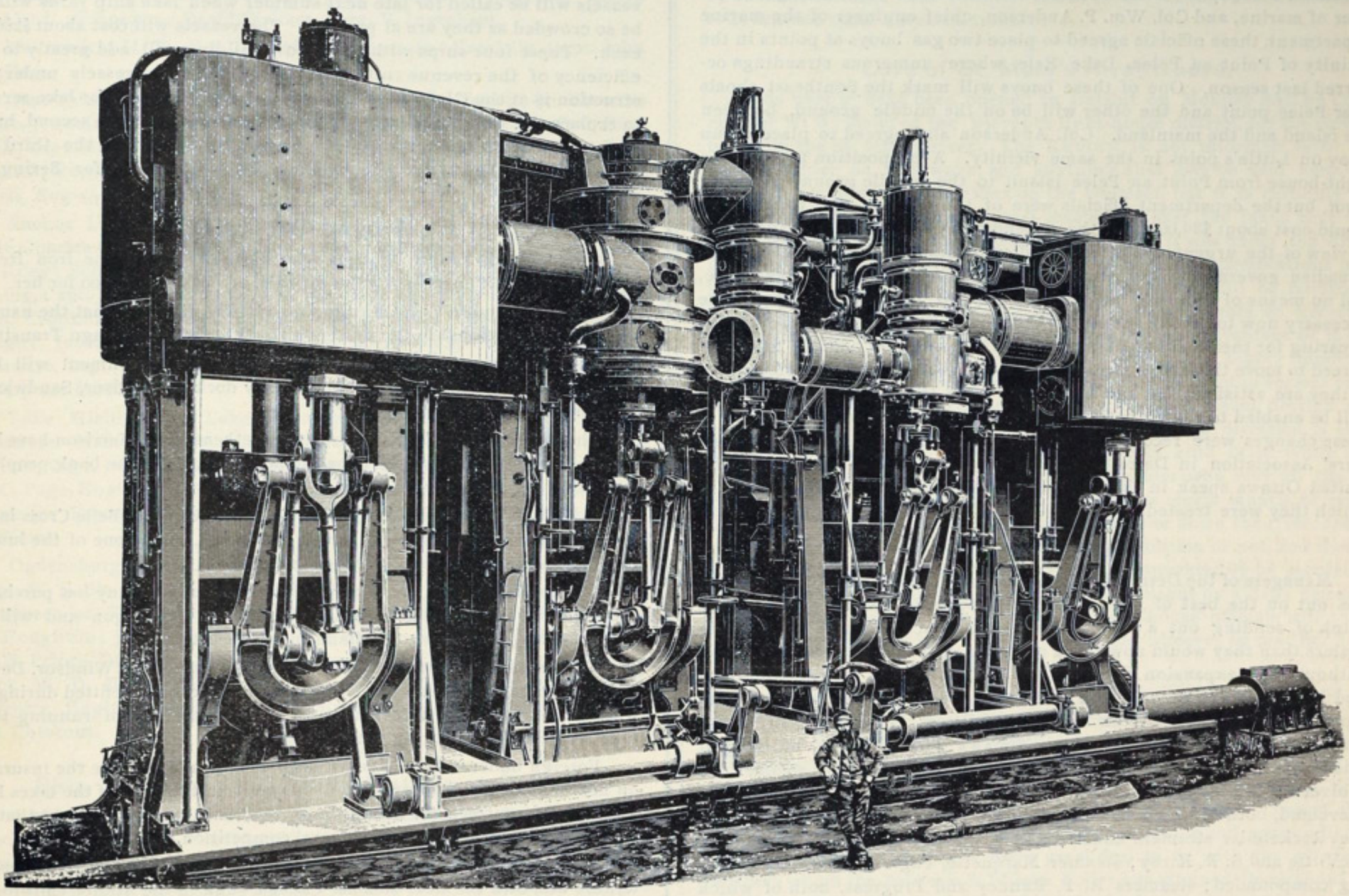
Why not patronize the Nickel Plate road on your next trip to New York City or Boston? They operate solid through trains, elegantly equipped with palace sleepers and fine day coaches, attended by uniformed colored porters whose duties require them to look out for the comfort of passengers; magnificent dining cars. The popular low-rate short line. 21-Mar. 31.

Immense Compound Engines.

Engines of the Italian battleship Sicilia are illustrated on this page. The engraving is a reproduction from Engineering of London. This vessel is the last of the monster battleships known as the Umberto type. The Sicilia is 400 feet long, 77 feet beam, 28 feet 8 inches mean draft and of 13,375 tons displacement. She was built at the Italian dock yard, Venice. The twin engines are of the double compound type, each with two high pressure cylinders 47 inches in diameter, and two low pressure cylinders 89 inches in diameter, with 4 feet 3 inches stroke, and the collective horse power of the engines is 15,200 under natural and 20,000 under forced draught. There are 18 boilers, arranged in six compartments, two of them abaft the engine rooms. The boilers are 14 feet 3 inches in diameter by 9 feet 7 inches long, each with four furnaces of 3 feet 2 inches diameter, and the working pressure is 100 pounds.

The Marine Engine in Stationary Work.

The vertical inverted engine, commonly called the marine type, is rapidly making headway for stationary purposes. We recently noticed a set of five triple expansion engines of this style installed by Samuel F. Hodge & Co. of Detroit, one of the oldest marine engine building firms on the lakes, in the public lighting plant at Detroit. Among other orders held by Hodge & Co. for engines of this type is one for two sets of triple expansions with cylinders 13, 21 and 34 inches diameter by 24 inches stroke to indicate 400 horse power at 125 revolutions. They are to be direct connected to centrifugal pumps for drainage purposes at New Orleans. The pumps are among the largest ever built in the country, having a discharge pipe 4½ feet in diameter. Steam at 180 pounds pressure will be furnished by Babcock & Wilcox boilers. The condensers will be independent and of the well-known Dean make. The New York Dredging Co. of New York, a concern having a large experience in works of this nature, are the contractors for the whole plant.



BIG COMPOUND ENGINES OF AN ITALIAN BATTLESHIP.

A subscriber of the MARINE REVIEW wishes a copy of No. 11, Vol. 5, 1892. We will pay 25 cents each for two copies. Send to MARINE REVIEW, 516 Perry-Payne building, Cleveland, O.

S. F. Hodge & Co., Detroit, are advising patrons to try semi-steel propeller wheels. They are following the McDowell semi-steel process in making wheels. The metal is said to have double the strength of ordinary cast iron.

Urge the Use of Pintsch Gas Buoys.

Lake vessel masters had some practical experience at Erie last season with the Pintsch gas buoy, and as a result both owners and masters are doing all in their power to urge upon congress the necessity of passing the bill introduced by Representative Burton of Cleveland, providing for a large number of these buoys for the lakes. As it is certain anyhow that both the light-house board and the Lake Carriers' Association are entirely favorable to the adoption of these buoys for service in different parts of the lakes, there is little doubt of appropriations being secured eventually for a large number of them. The great value of the buoys is established, but it will be necessary for vessel owners everywhere to draw the attention of their congressmen to this fact in order to obtain the necessary appropriations. One very valuable feature of the gas buoy is that it is practically inextinguishable. One of them placed to mark a sunken yacht at the entrance to Boston harbor was in such position that a heavy current carried, at different times, seven vessels onto and over it, submerging it for several minutes at a time. It was not extinguished until one of these vessels forced it under water long enough to exhaust the supply of air. Light-keepers are sometimes unable to reach their lights in stormy weather when they are most needed. These buoys will burn eighty-five days to a year, in all kinds of weather, and the cost is less than 7 cents per twenty-four hours. There are 393 of them in use in the United States and other countries. The Suez canal is lighted with them.

In opposition to the claim of the Detroit bridge builders that tunnels are costly it may be noted that the Railway Review, in a recent article, commented on the very marked decrease which has taken place in the cost of tunneling of late years, which is ascribed to the great improvement that has been made in rock excavating tools and in general mechanical methods. Illustrating this point the journal mentions that the Hoosac tunnel cost $379 per foot; the Mont Cenis, the next in date, $359 per foot; the St. Gothard, $229 per foot, and the Ariberg, $154 per foot, while the tunnel on the line of the Northern Pacific Railroad through the Cascade mountains, 8,950 feet long was bored at the rate of 412 feet a month, at a cost for the completed tunnel of only $118 per foot.

Supt. Dickie of the Union Iron Works, San Francisco, is in Japan trying to secure a part of the naval work for which the Japanese government is about to make large appropriations.

Gas Buoys in Pelee Passage.

The Canadian senate is a dignified body, but its high sense of propriety and parliamentary courtesy did not deter Capt. Wm. Mack of Cleveland from carrying out the object of a visit which he made last week with Capt. Geo. P. McKay to Ottawa. A gentleman who heard Capt. Mack's address to the Canadian senators on the Detroit river bridge question says it was really a very forcible argument and the best speech he ever made. He prefaced his remarks with a statement in plain words of the fact that he had advanced from the ordinary position of a sailor to the ownership of considerable vessel property, and that he made no pretense of ability to address the dominion legislators in a manner suiting the general tone of their deliberations. He was listened to with great interest, but the granting of a charter to the bridge company in Canada was a foregone conclusion. The dominion legislators had before authorized the construction of a bridge, and they are entirely in favor of bridging the river. The volume of Canadian commerce in the Detroit river, or in fact in all parts of the lakes, is too small to exert a strong influence with the government.

But the trip of Captains Mack and McKay to Ottawa was decidedly beneficial otherwise. After a conference with Hon. John Costigan, minister of marine, and Col. Wm. P. Anderson, chief engineer of the marine department, these officials agreed to place two gas buoys at points in the vicinity of Point au Pelee, Lake Erie, where numerous strandings occurred last season. One of these buoys will mark the Southeast shoals near Pelee point and the other will be on the middle ground, between the island and the mainland. Col. Anderson also agreed to place a nun buoy on Little's point in the same vicinity. A proposition to move the light-house from Point au Pelee island to the middle ground met with favor, but the department officials were of the opinion that this change would cost about $30,000 and the expenditure was considered too large, in view of the urgent needs of Canadian commerce elsewhere. As the Canadian government has no regular light-house tender on Lake Erie, and no means of securing supplies of gas for these buoys, it will be necessary now to invoke the aid of the United States light-house service in caring for these aids to navigation. The dominion officials have also agreed to move the life-saving station now on Pelee island to Pelee point, as they are satisfied that the life savers when located on the mainland will be enabled to render better service than they have in the past. All of these changes were recommended at the last meeting of the Lake Carriers' Association in Detroit. Representatives of the association who visited Ottawa speak in the highest terms of the courteous manner in which they were treated.

Ship Yard Matters.

Managers of the Detroit Dry Dock Co. are declaring that when patents run out on the best of the forced draft systems owners will no more think of sending out a new ship without attachments of this kind to boilers than they would now think of fitting up a first-class freight vessel without triple expansion engines. Up to last fall the Howden hot draft had been fitted to only sixteen lake vessels, but now the dry dock company is fitting it to fourteen others as follows: Two new vessels for James Davidson at West Bay City; Mohawk and Mohegan, building at Chester, Pa.; side-wheel steamer City of Buffalo; 400-foot steamer for Wolverine company of Detroit, and steel steamer for Jones & Co. of Cleveland, both of which are nearing completion at Wyandotte; two 400-foot Rockefeller steamers under construction at Wyandotte; steamers A. McVittie and S. R. Kirby; steamer Marquette, engines of which are being compounded; steamers R. P. Ranney and Progress, both of which are also receiving new boilers. Mr. C. B. Calder, superintendent of the Dry Dock Eng ne Works, says that he considers Capt. James Davidson's action regarding this draft the best kind of an argument in favor of it. The first steamer that Capt. Davidson fitted with the draft was the W. B. Ketcham and he has had it applied to every steamer that he has since built.

In the feathering wheels of the new side wheel steamer City of Buffalo, building at Detroit, every arm, forearm, bucket, sprocket and duplicate piece is interchangeable; each bolt will fit in any place in either wheel. Bushings are all bronze. The wheels are 30 feet in diameter, weighing fifty-eight tons each, and are expected to be driven as rapidly as thirty five revolutions a minute. The main shafts are 29 feet long and 24 inches in diameter, and weigh 18½ tons each. Buckets are 4 feet by 12 feet, of ⅞-inch steel, and reinforced at the outer end by ⅝-inch plate instead of planking. They are convexed surface, with angle-iron at the end to keep the water from running off, and weigh 2,880 pounds each.

A very large and powerful harbor tug, the T. C. Lutz, built for the Hausler & Dunham Towing Co. of Chicago, was launched at South Chicago Monday. She is specially fitted for Calumet river service, which has to do almost entirely with vessels of the very largest type. Dimensions of this tug are: Length, 95 feet; beam, 20 feet; depth of hold, 11½ feet; draft, 11 feet. She has a fore-and-aft compound engine, with cylinders 18 and 36 inches in diameter and 30 inches stroke. The boiler will be of the regular marine type, measuring 14 by 9½ feet, and capable of withstanding 150 pounds working steam pressure. The machinery is already in the hull, and the boiler will be placed in a few days. An independent condenser will be furnisned, and the shaft will have universal coupling. The tug will be steered by steam and will have a large rudder to enable quick movements. The tug T. T. Morford, which was wrecked in an explosion last fall, will come out about the same time as the Lutz. During the winter her hull was completely rebuilt and the engine repaired. The boiler will be larger than the old one and will be allowed 150 pounds steam pressure.

April 4 is the date fixed for the launch of the big steel tug Edna G., building at the yard of the Cleveland Ship Building Co. for the Duluth & Iron Range Railway, and which is to be engaged in harbor service at Two Harbors.

Revenue Cutters.

An effort is being made by the secretary of the treasury to secure appropriations from the present congress for four new revenue cutters—two for the lakes, one for New York station and one for the Southern coast. If appropriations are secured, proposals for the construction of these vessels will be called for late next summer when lake ship yards will not be so crowded as they are at present. The vessels will cost about $200,000 each. These four ships with three now building will add greatly to the efficiency of the revenue cutter service. One of the vessels under construction is at the Globe yard Cleveland and is intended for lake service, to replace the old side-wheeler Johnson at Milwaukee; the second, building at East Boston, is for the New England station, and the third one, under way at the yard of the Cramps, Philadelphia, is for Bering sea service.

Around the Lakes.

Grand Trunk Railway officials, who have advertised the iron freight and passenger steamer Wisconsin for sale, are asking $75,000 for her.

The H. Channon Co., Chicago, informs the REVIEW that the name of the Ketcham Steamship Co has been changed to the Chicago Transit Co.

As soon as weather will permit, the Canadian government will have plans prepared for the construction of a dry dock at Windsor, Sandwich or Walkerville, Detroit river.

The steamer Pringle and consorts Sweetheart and Harrison have been sold to the Riesterer bank of Tonawanda for $45,000. The bank people already own the schooner Unadilla.

B. B. Inman of Duluth is figuring on converting the Belle Cross into a wrecking steamer and locating her at the Sault, using one of the lumber barges which she has been towing as a lighter.

The Lake Michigan Car Ferry Transportation company has purchased the tug E, G. Crosby from E. G. Crosby & Co. of Muskegon and will use her at Peshtigo or Chicago for handling car ferries.

The passenger steamers Cambria and Carmona of the Windsor, Detroit & Soo Line have been extensively repaired and cabins refitted during the winter. The company is considering the advisability of running these vessels to Sandusky during the coming season.

Foreign underwriters who last year secured at a low rate the insurance on nearly all of the flour and grain moved from the head of the lakes have again closed contracts for insurance of the flour, but it is thought that the grain business will be open to general competition.

It is learned that Capt. James Reid's arrangement with the underwriters who own the steel steamer Cayuga, sunk in the Straits, calls for reimbursement to the extent of 60 per cent. of the appraised value of the steamer after she has been floated, or 60 per cent. of whatever amount she may bring under the hammer in case the Lehigh Valley people refuse to accept her at an appraised valuation in her wrecked condition. Capt. Reid says he will begin work on the Cayuga as soon as the ice is out of the way.

The purchase of the steamer Globe from the Globe Iron Works Co., Cleveland, by John Gordon of Buffalo, is proof of the fact that Mr. Gordon still wields a big influence with railway managers who want lake connections, and that his ability in transportation matters will eventually bring him to the front again on the lakes. Mr. Gordon had been figuring with the Globe company for other vessels of the Menominee Steamship Co., which they control, and it is quite probable that his plans, even for the coming season, will not end with the purchase of this one vessel. He has not made his intentions public, but it is quite probable that he has plans laid for a line with railway connections between Buffalo and the head of Lake Superior. Other negotiations for the charter or sale to Buffalo railway lines of steel vessels that have been engaged in the ore and grain trades are under way.

George B. Mallory, well known as the designer of the lake steamers Owego and Chemung, has given up the business of naval architect, engineer and yacht broker, which he conducted in the Produce Exchange building, New York.

Appointments of Masters and Engineers.

Zenith and Empire Transit Companies, A.B. Wolvin, Manager, Duluth, Minn.: Steamers—Zenith City, Capt. F. C. Rae, Engineer L. M. Peck; Queen City, Capt. R. J. Lyons, Engineer Jos. F. Hayes; W. H. Gilbert, Capt. R. J. Cowley, Engineer J. Wood.

Windsor, Detroit, & Soo Line, G. W. Brown, Manager, Windsor, Ont: Steamers—Cambria, Capt. Neil Campbell, Engineer John Doran; Carmona, Capt. Chas. Hill, Engineer ————.

Lehigh Valley Transportation Co., Buffalo: Steamers—Wilbur, Capt. P. McFarlane, Engineer C. R. Plodeck; Seneca, Capt. D. Driscoll, Engineer, C. Nise; Saranac, Capt. J. M. Todd, Engineer J. Leahy; Tuscarora, Capt. W. Williams, Engineer H. N. Wadleigh; Tacoma, Capt. Jas. A. Brown, Engineer Geo. Hale; Oceanica, Capt. James Todd, Engineer J. P. Navaugh; Clyde, Capt. Stephen Lyons, Engineer R. Fleming; H. E. Packer, Capt. M. M. Holland, Engineer Samuel Moore; Fred Mercur, Capt. C. E. Fuller, Engineer Wm. Teon; R. A. Packer, Capt. John Burns, Engineer J. Bluett.

Wallace, David, Lorain, O.: Steamers—Vega, Capt. W. H. Wallace, Engineer Chas. Sterling; Vulcan, Capt. Adolf Oldorff, Engineer John McMonagle; Robert Wallace, Capt. John N. Smith, Engineer Edwin Stoddard. Schooner—David Wallace, Capt. F. Ingraham.

McCormick, H. W., Bay City, Mich.: Steamer—Katahdin, Capt. John Sterling.

Lake Erie Transportation Co., A.W. Colton, Mgr., Toledo, O.: Steamers—Geo. J. Gould, Capt. Walter M. Cottrell, Engineer Geo. Butler; S. C. Reynolds, Capt. Henry Root, Engineer Jas. Miller; Russell Sage, Capt. T. C. Herrick, Engineer Joseph Kohlbrenner; Jno. C. Gault, Capt. Chas. H. Lewis, Engineer John Busted.

Anchor Line, Buffalo: Steamers—India, Capt. P. O'Neil; China, Capt. Charles Christy; Japan, Capt. John Doherty; Susquehanna, Capt. M. Riley; Schuylkill, Capt. H Miller; Codorus, Capt. D. Ryder; Mahoning, Capt. Joseph Corcoran; Clarion, Capt. Charles Nelson; Conestoga, Capt. Cronkhite; Conemaugh, Capt. Frank Bloom; Lycoming, Capt. L. Wright; Juniata, Capt. Henry Delaney; Alaska, Capt. Edward Martin; Delaware, Capt. A. Mackenzie; Lehigh, Capt. Frank Berro; Wissahickon, Capt. John McCarty.

Lake Michigan & Lake Superior Transportation Co., Chicago: Steamers—Manitou, Capt. Allen McIntyre, Engineer R. L. Peck; City of Duluth, Capt. Donald McLean, Engineer Henry Chalk; Peerless, Capt. H. C. Page, Engineer J. R. Bennett; City of Traverse, Capt. J. M. Twichell, Engineer Edward Meeh; Jay Gould, Capt. Jas. White, Engineer A. P. Williams.

Ogdensburg Transit Co., Ogdensburg, N. Y.: Steamers—Gov. Smith, Capt. W. S. Shay, Engineer J. N. Phillips; H R. James, Capt. Jas. Owens, Engineer Jas. Turnbull; A. McVittie, Capt. W. H. Williams, Engineer A. D. Houghton; J. R. Langdon, Capt. H. Brown, Engineer D. G. Costello; F. H. Prince, Capt. D. A. Kiah, Engineer Robt. Chestnut; W. J. Averell, Capt. W. D. Wait, Engineer J. Alexander; W. A. Haskell, Capt. D. Murphy, Engineer M. Gore; W. L. Frost, Capt. E. E. Shay, Engineer Jas. Chestnut.

Ship and Engine Building Matters at Detroit.

DETROIT, MICH., March 18.—The management of the Detroit Dry Dock Co. points with considerable pride to the job which is now about completed on the big steel steamer Selwyn Eddy. The dry dock company built this ship and the managers are proud of the material they put into her. When she was docked her bottom was corrugated. Alike to many other steel ships that have been in contact with rocks, her bottom resembled the small hills in a cornfield. But the material in every plate was of good quality and not one of them was thrown away. All were rerolled, or straightened in some other manner, and put back on the ship. Thus the job of repairs was far less costly than it would have been if it were necessary to supply new plates. The Eddy's place in the dock will be taken by the steamer Gettysburg, which will get a new wheel and general repairs.

Work on the two Rockefeller boats that are building here is probably being advanced rapidly enough to complete them within the specified time, although it is understood that the dry dock company is not subject to demurrage. The understanding in their case was that in event of delay they would simply pay interest on money advanced for the work as it goes along. At the engine works the machinery for these ships is well under way and repair jobs are quite numerous. The big new shops at the Wyandotte ship yard are about completed. A new Corliss engine is in place and two boilers that will furnish steam for this engine are being rapidly fitted up. All of the new tools are of modern type and very powerful, notably the big "squeezer," which will straighten out heavy 16-inch channels with ease. A new shears and punch, constructed at the Dry Dock Engine Works, weighs about twenty-three tons and is specially adapted for heavy work. Most of the wood sheathing on the steamer building for Jones & Co. of Cleveland is in place and other parts of the work is progressing so rapidly that the vessel will be ready for launching at an early date. The 400-foot steamer for the Wolverine Steamship Co. of Detroit is entirely in frame, with ballast tanks completed and some of the bottom plating in place. Not so much can be said of the Rockefeller ships, but a night shift is kept at work in the shops and the new machinery will add wonderfully to the capacity of the plant later on.

It will probably be three weeks or a month before the steamer Fayette Brown, which is being lengthened 50 feet, leaves the dock at Springwells. The steam barge Louis Pahlow, which received new keelsons and steel arches at Springwells during the winter, has been taken to the River Rouge for new upper works and will be practically a new vessel when she comes out in the spring. Her machinery will be improved by a new high pressure cylinder, to be furnished by S. F. Hodge & Co.

At the Frontier Iron Works, triple expansion engines for one of the Davidson steamers (builder's number 76) are ready for shipment to the Bay City yard. These engines have cylinders 20, 32 and 54 inches diameter by 42 inches stroke. A second set of triples for Davidson's steamer No. 77 are partly erected. These have cylinders 16, 25, and 42 inches diameter by 34 inches stroke. The Frontier works is also engaged extensively on soda ash and other chemical machinery.

Care of St. Mary's River Buoys.

Bids were to have been opened in Detroit on Monday last, by Commander W. W. Mead of the Eleventh light-house district, for the care of buoys on the St Mary's river. The REVIEW is not informed as to the lowest bidder on this work, and anything that may be said here will probably not now have any effect on the contract, but it is certainly the opinion of vessel owners and vessel masters all over the lakes that this work has never been as well attended to as when it was under the direction of P. M. Church of Sault Ste Marie. Among the specifications is an item which says that "a daily patrol of the channels will be required." This is the important item of the contract but it appears so uncertain that anyone taking the contract might certainly take advantage of it and go to little expense in partly tending to a work that is highly important to all vessel owners. When Mr. Church had this contract in former years it was known that he furnished a suitable tug with steam derrick and capable men, and this is why the service under his direction is commended. A bidder offering assurances of this kind is certainly at a disadvantage as against an irresponsible bidder who may fill the requirements of a daily patrol with an inexpensive steam launch, or possibly by taking passage on some freight vessel up or down the river, noting on the trip whether the buoys are in proper condition or not, and then, if any are out of place, waiting until a tug can conveniently be secured to replace them. This is certainly not what is meant by a daily patrol of the river, and it is to be hoped that the light-house officials will insist upon a full understanding with the contractor, whoever he may be.

Nat. W. Pratt, president of the Babcock & Wilcox Co., died at his home in Brooklyn, N. Y., on the 10th inst., aged forty-four years. He was of old American stock. Families on both his father's and mother's side settled in Plymouth county, Mass., in 1630. His father, Wm. Pratt, was during the war superintendent of the Burnside armories in Providence, R. I. He has been with the Babcock and Wilcox concern since 1870. His engineering knowledge, inventive genius and extraordinary business qualifications have had a great deal to do with the wonderful success which the Babcock & Wilcox boiler has attained throughout the civilized world. He was a member of the leading engineering societies of the country, and his death, in the prime of life, must be regarded as a great loss to advancement in the line of engineering in which he was engaged. By his extraordinary sagacity and sound business judgment the business that engrossed his life from a very small beginning developed and grew enormously, and the best monument he leaves behind him is the world-wide fame of the Babcock & Wilcox boiler.

Senator McMillan of Michigan has interested himself in trying to amend the laws relative to the granting of medals for saving life, so as to extend the benefits to citizens generally, as well as to regularly employed life savers. He found difficulty in securing recognition for a brave act performed by one of the Lynn brothers of Port Huron, and has introduced a bill, which has the approval of the secretary of the treasury, and which provides "that the acts relating to life saving stations, and the life saving service, which provide for the award of life saving medals, shall be construed so as to empower the secretary of the treasury to bestow such medals upon persons hereafter making signal exertions in rescuing and succoring the shipwrecked, and saving persons from drowning in the water over which the United States has jurisdiction, whether said persons making such exertions were or were not members of a life saving crew or whether or not such exertions were made in the vicinity of a life saving station."

MARINE REVIEW

DEVOTED TO THE LAKE MARINE AND KINDRED INTERESTS.

Published every Thursday at No. 516 Perry-Payne building, Cleveland, O

SUBSCRIPTION—$2.00 per year in advance. Single copies 10 cents each. Convenient binders sent, post paid, 75 cents. Advertising rates on application.

The books of the United States treasury department on June 30, 1895, contained the names of 3,342 vessels, of 1,241,459.14 gross tons register in the lake trade. The number of steam vessels of 1,000 gross tons, and over that amount, on the lakes on June 30, 1894, was 359 and their aggregate gross tonnage 634,467.84; the number of vessels of this class owned in all other parts of the country on the same date was 316 and their tonnage 642,-642.50, so that half of the best steamships in all the United States are owned on the lakes. The classification of the entire lake fleet on June 30, 1895, was as follows:

Class.	Number.	Gross Tonnage.
Steam vessels	1,755	857,735.00
Sailing vessels	1,100	300,642.00
Unrigged	487	83,082.00
Total	3,342	1,241,459.00

The gross registered tonnage of vessels built on the lakes during the past five years, according to the reports of the United States commissioner of navigation, is as follows:

	Number.	Net Tonnage.
Year ending June 30, 1891	204	111,856.45
" " " 1892	169	45,168.98
" " " 1893	175	99,271.24
" " " 1894	106	41,984.61
" " " 1895	93	36,353.00
Total	747	334,634.28

ST. MARY'S FALLS AND SUEZ CANAL TRAFFIC.

(From Official Reports of Canal Officers.)

	St. Mary's Falls Canal.			Suez Canal.		
	1895 *	1894	1893	1895.	1804.	1893.
No. vessel pass'ges	17,956	14,491	12,008	3,434	3,352	3,341
T'n'ge, net registd	16,806,781	13,110,366	9,849,754	8 448,383	8,039,175	7,659,068
Days of Navigat'n	231	234	219	365	365	365

* 1895 figures include traffic of Canadian canal at Sault Ste. Marie, which was about 4½ per cent. of the whole, but largely in American vessels.

Entered at Cleveland Post Office as Second-class Mail Matter.

The REVIEW joins the best newspapers and trade journals of the country in urging the passage of the bill introduced in congress by Representive Loud of California, who seeks to define the kinds of mail matter to be carried at second-class rates. This is a matter that interests everybody using the mails. Publications that are really entitled to second-rate privileges will suffer some loss if this bill is passed, but they are as a rule willing to suffer disadvantages in order to remove serious abuses that threaten the best interests of the service. All heads of the postoffice department have declared that the chief cause of the yearly deficit in the revenues of the department is the gross abuse of the provisions relating to second-class rates of postage. In the last annual report Postmaster-General Wilson declared that two-thirds in weight of all the matter carried in the mails is, under existing laws and classifications, carried as second-class matter, at the rate of 1 cent per pound, when it is not actually carried postage free. Mr. Loud's bill provides that in order to entitle a publication to admission to second-class rates it must be regularly issued at stated intervals as frequently as four times a year, from a known office of publication which shall be shown by the publication itself; must bear a date of issue and be numbered consecutively, and must be formed of printed paper without any substantial binding, such as distinguishes printed books for preservation. Under the provisions of the bill, publications purporting to be issued periodically and to subscribers, but which are merely books or reprints of books, are excluded from treatment as second-class matter. These publications do not come within the spirit of the law admitting bona fide periodicals to second-class rates. They have been the greatest drag on the service and should be excluded. The rate of postage upon "returns" of unsold periodical publications is increased by the bill from one to four cents a pound, and for this provision also the bill is criticised, but with little show of reason, for, as one of our exchanges puts it, "the government ought not be forced into the express business at a loss for the benefit of people who overestimate the salability of their publications." Only one or two matters of detail in the bill might be modified. The provision requiring publishers to separate mail matter into United States mail sacks or bundles by states, cities, towns and counties, as the postmaster-general may direct, should be stricken out. It is a fact that in most postoffices the men in charge prefer to do this work themselves, in order to guard against mistakes. That part of the bill relating to sample copies of publications that are fully entitled to the second-class privileges should also be modified.

IT IS unfortunate that Mr. Goulder, counsel of the Lake Carriers' Association, can not be in Washington for two or three weeks to come, especially on account of the present status of the Detroit river bridge matter and the fact that the river and harbor committee is about to hold night sessions in order to hurry its report. To vessel owners generally the rafting regulations are the most important feature of the river and harbor bill. Appropriations for the various harbors are looked after by local interests and by congressmen who have the welfare of their districts first in mind. It is understood, however, that Secretary Keep of the Lake Carriers' Association will go to Washington for a few days. He will be joined by Capt. Dunham of Chicago and probably other vessel owners. Most people reading newspapers of late are liable to conclude that the Detroit river bridge bill is to be passed without the least difficulty. Such is not the case, however, as there has been no official action on the bill in the house, where the vessel owners have entirely the best of the situation. Although the bill has been reported favorably to the senate, it will be still some time before it is reached on the calendar. It will be fought in the senate with about equal chances between the railway and vessel interests, and every possible objection will be made against it before the house is consulted at all in the matter. On the whole it is fortunate for the vessel interests that the bridge builders decided to concentrate all their strength in the senate before taking this matter up in the house. If they should be successful in the senate, they will find a rush of other important matters in the house late in the session, and this delay will act to their disadvantage in the lower branch of congress, where the more difficult fight must be made.

GEN. CRAIGHILL, chief of army engineers, seems to be falling in line with the Chicago drainage canal engineers and with leading hydraulic engineers, who are engaged in the civil pursuits throughout the country, in admitting that a thorough investigation of the entire lake outflow question must be made before any definite conclusions can be reached regarding the effect of the drainage canal on lake levels or the practicability of constructing dams for the purpose of increasing the depth of channels. In a report to congress under date of Feb. 24, 1896, regarding a resolution asking for an estimate of the cost of making a survey of the outlets of Lakes Erie, St. Clair and Huron, with a view to constructing dams, he says: "A proper investigation of the physics and hydraulics of the great lakes, including the surveys referred to, is desirable. Some information can be furnished at the present time, but reliable data upon which to base reports upon the question to be considered are not now available. As stated in my report on a former resolution, a thorough investigation of the physics and hydraulics of the great lakes, and questions relating to the feasibility of constructing dams at outlets, should extend over a sufficient time to eliminate accidental fluctuations and cover all stages, and may have to be continued several years. These surveys and investigations will cost approximately from $150,000 to $175,000."

AN OFFICER of the steamboat inspection service, commenting on the Frye bill, which proposes a number of changes in steamboat laws, and which was interpreted quite freely in the last issue of the REVIEW, says it is his opinion that the efficiency of the service could be better maintained if the clerks of inspection boards were included in the amendment to section 4,407, revised statutes, which retains in office local and assistant inspectors during good behavior. This is a suggestion worthy of consideration from Senator Frye and others who are specially interested in the bill. The same officer commends very highly the proposed amendments to section 4,415. One amendment to this section changes the method of designating local inspectors, making the supervising inspector the sole designator, instead of in conjunction with the judge of the district court and the collector of customs, as by the present method there are frequent dead-locks, keeping the vacancies open sometimes for months. A second amendment requires such selection to be non-partisan.

ONE OF the most elaborate collections of statistical tables and diagrams that we have ever seen has recently been prepared by the Cleveland chamber of commerce. The work compares, side by side with river and harbor appropriations, the water commerce of Cleveland and that of other shipping points throughout the country. The data is generally reliable and will undoubtedly be used to great advantage in dealings with congressional committees. It is highly creditable to Secretary Ritchie and his assistants.

Reduced rate tourist tickets to California points are now on sale by all agents of the Nickel Plate road. Our trains make excellent connections at Chicago with through trains to the coast. 22-Mar. 31.

Summary of Arguments Against Detroit River Bridge.

One of the latest documents from the vessel interests to members of congress on the Detroit river bridge question is the following concise statement of facts from the various lengthy papers that have been filed in Washington.

SUGGESTION AGAINST PIER OBSTRUCTIONS IN THE DETROIT RIVER.

	TONS.
Railroad tonnage crossing Detroit river, approximately	4,500,000
Tonnage passing by water, 1895, total	30 000,000
" New York harbor, 1895, "	20,993,000
" Thames (London), 1895, "	20,962,000
" Mersey (Liverpool),1895, "	16,621,000
" Suez canal, 1895, "	8,448,383
" Sault canal, 1895, "	16,806,781
" Boston, 1895, "	5,800,000
" Baltimore, 1895, "	5,000,000
" The Clyde, 1895, "	5,977,000

Detroit river tonnage is rapidly increasing. Vessels under construction insure an increase of nearly 10 per cent. this year.

Average haul Michigan Central Railroad, 200 miles, ton mileage service crossing	900,000,000
Average lake haul,750 miles ton mileage service, passing	22,500,000,000, equalling 27 per cent. of all railroads in the United States.
Michigan Central Railroad, price per ton mile, average ,1894	$6\frac{87}{100}$ mills.
Lake price per ton per mile, 1895	$\frac{85}{100}$ of one mill
Passengers crossing by Michigan Central Railroad said to be	300,000
Passengers on river, more than	5,000,000
Width of river from shore to shore:	
At 10th street, Detroit	2,300 feet.
At 20th " "	1,900 "
Depth varies up to a maximum of nearly	50 "
Proposed cost of bridge, with two piers, each about 600 feet in stream	$4,000,000

That such piers would be a serious and dangerous obstruction to navigation see protest Lake Carriers' Association, protest Shipmasters' Association, protest commercial bodies and individuals.

An estimate not to exceed $7,000,000 was made for a bridge spanning the river without piers.

SUGGESTIONS FAVORING A TUNNEL.

That a safe commodious, well-lighted, well-ventilated tunnel, cheaper in first instance and in maintenance, can be built, is shown as follows:

1874. Report of board of engineers, forty-third congress, first session, H. R. Ex. Doc. No. 64.

1879. Report of board of engineers, forty-sixth congress, second session, Sen. Ex. Doc. No. 9.

1889. Report of board of engineers.

1890. Special report of board of engineers, fifty-first congress, first session, H R. Ex. Doc. No. 369.

The following experts, familiar with the ground, certify positively, over their signatures, the feasibility and economy of building the tunnel: Gen. William Sooy Smith, estimate. $3,000,000; Lyman E. Cooley, $3,000,000; George Y. Wisner and Prof. H. B. Herr, well within $4,000,000. S. G. Artingstall says it is the cheapest and best solution of the question. John Nichol, engineer on the original survey, George Chambers who built sub-tunnel three-fourths across, and Henry Collins who was engaged on the survey and sub-tunnel, all say a tunnel is feasible and not too costly.

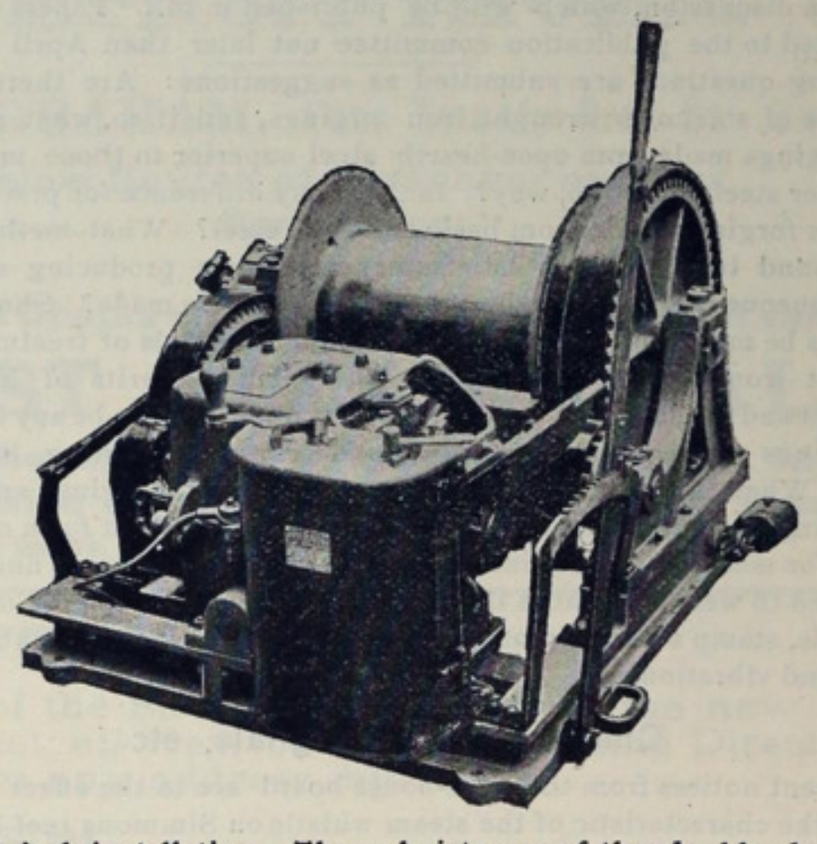
Proposals from experienced, practical and responsible parties have been made to bid on such a tunnel and approaches complete giving guaranty and satisfactory bonds. Among these are: Jesse H. Farwell, Detroit, $3,500,000; Fitzsimons & Connel Co., Chicago, $3,250,000; Shailer & Schniglau Co. $3 600,000.

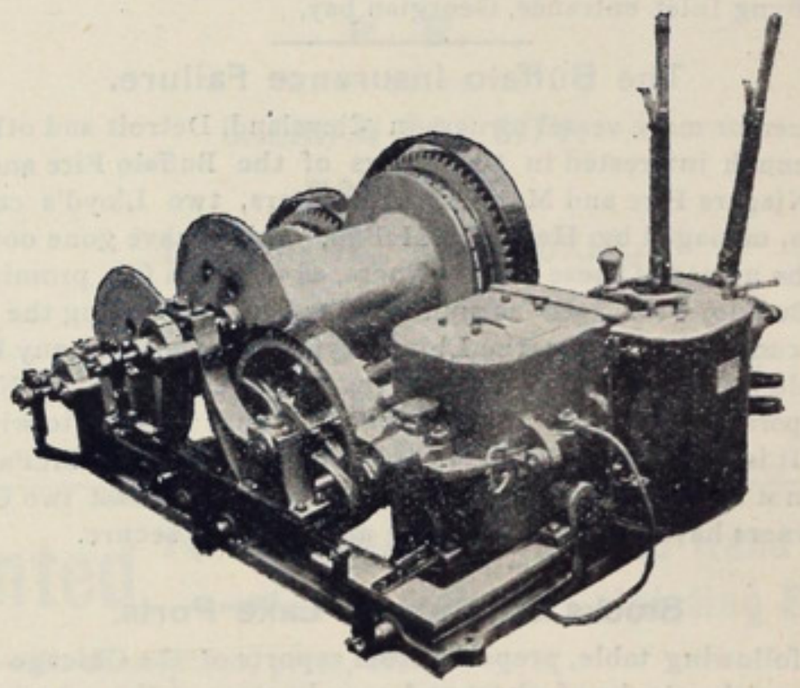
If advertised for in the usual manner other bids would doubtless be forthcoming. All papers referred to herewith have been filed.

James Graham, who operates one of the pocket fueling docks on the Detroit river, has made full preparations for his steamboat fuel business for the coming season. He has contracted with the light-house officials to furnish fuel to two of their vessels and is already putting fuel aboard some of the passenger steamers. Mr. Graham will have an uptown office in Detroit shortly. His dock is at the foot of Twenty-First street, below the passenger ferries and car ferries. The great width of river at this point is an advantage when captains are compelled to round to with tows. There is 500 feet of dock front and plenty of water at all times. Pockets are of different heights, so as to suit all vessels. Large stocks of coal are on hand at all times and it is of the best quality for steam purposes. Captains who may have business up town can reach the central portion of the city by electric car in ten minutes.

Electric Motors for Portable Hoists.

The application of the electric motor to portable hoists for derricks is illustrated in the two hoists which the General Electric Co. has lately furnished the United States government, in connection with an important electrical installation. These hoists are of the double drum and the single drum type respectively, the double drum hoists being operated by a 20-horse power motor the single drum hoists by one of 10 horse power. Each motor is mounted upon the same bed plates as the hoist and is of a late and efficient type, resembling in general appearance the well known G. E. 800, so extensively employed in railway service. The parts of the motors are all readily accesible for examination and repair, but are entirely covered in by the motor casing and are thus fully protected against dust, moisture and mechanical injury. The armatures are iron clad, each coil lying in a slot in the iron core entirely below the outside surface. The motors are sparkless and the bearings are self oiling. The controllers are known as M. R., and embody all the excellent features of the controller K 2 used in street car work. The levers for the brakes, controllers, etc., are so arranged that full control of the entire mechanism is had without change of position by the man in charge. The hoists themselves are from the works of the Lidgerwood Co. The drums are 14 inches in diameter and 26 inches long.





Vessels to the number of 1,008, aggregating 87,361 registered tons, were added to the French merchant fleet during 1895. French-built vessels aggregated 35,725 tons while the foreign-built total was 51,636 tons. In detail the figures are: Twenty-four steel steamers of 13,794 tons and five wooden steemers of 215 tons, built in France; forty-three iron or steel of 43,238 tons, and eight wooden steamers of 425 tons, foreign built; four steel of 7,019 tons, and 819 wooden sailing vessels, built in France; and two steel of 1,758 tons and seventy-three wooden sailing vessels, foreign built.

The solid through trains of the Nickel Plate road, equipped with all modern appliances for safety, speed, and comfort, are the prominent feature of that popular line. Their fast eastern express, leaving Chicago at 1:30 p. m. daily, runs through solid to New York City, arriving at that point at 6:30 p. m. the next evening. Experience is the best teacher. After you experience a trip on this train, we are confident of your future patronage. 19-Mar. 31.

Steel Forgings.

Ship and engine builders will be interested in a discussion that is being conducted by the Western Society of Engineers, Monadnock building, Chicago. Everybody interested in steel forgings is asked to take part in a discussion, which will be published in full. Papers must be submitted to the publication committee not later than April 30. The following questions are submitted as suggestions: Are there any advantages of steel over wrought iron forgings, and if so, what are they? Are forgings made from open-hearth steel superior to those made from Bessemer steel, and if so, why? Is there any difference for practical uses between forgings made from basic and acid steel? What methods have been found to give most satisfactory results in producing solid and homogeneous ingots from which forgings are to be made? Should steel forgings be made under separate and distinct methods of treatment from wrought iron forgings? What are the relative merits of hammered forgings and those forged under a press? Should there be any treatment of forgings subsequent to forging and before machining, and if so, what? What is the effect of simple annealing of forgings and also of tempering and subsequent annealings? What is the best form of specification for machine and engine forgings where the surface is finished and subjected to wear? What is the best form of specification for drop hammer rods, stamp stems and other similar forgings which are subjected to shock and vibration?

Changes in Fog Signals, etc.

Recent notices from the light-house board are to the effect that next season the characteristic of the steam whistle on Simmons reef light-vessel in the Straits of Mackinac will be changed to sound in thick or foggy weather blasts of five seconds separated by silent intervals of fifty five seconds; the characteristic of the Gray's reef light vessel in the same vicinity, two blasts of one second each, followed by a silent interval of twenty seconds, and one blast of three seconds followed by a silent interval of fifteen seconds; and there will be established at the Sheboygan (Wis) light station a 10-inch steam whistle, to sound blasts of four seconds, separated by silent intervals of twenty-six seconds.

The hydrographic office has issued the first of its "Notices to Mariners" for the lakes for 1896. It contains all of the recent changes in lights, fog signals, etc., made by the light-house board, and also a small chart of Byng Inlet entrance, Georgian bay.

The Buffalo Insurance Failure.

A dozen or more vessel owners in Cleveland, Detroit and other cities are very much interested in the affairs of the Buffalo Fire and Marine and the Niagara Fire and Marine Underwriters, two Lloyd's companies of Buffalo, managed by Henry S. McFall, which have gone out of business. The names of these vessel owners, as well as a few prominent citizens of Buffalo, were used as underwriters in conducting the affairs of the two companies under the Lloyd's system. The company known as the Buffalo has reinsured its risks in the Queen City, and the Niagara is now temporarily under the management of Henry Exstein to wind up its affairs. It is claimed that much of the business done by McFall is void and will not be recognized by the underwriters. At least two Cleveland vessel owners have claims which they are trying to secure.

Stocks of Grain at Lake Ports.

The following table, prepared from reports of the Chicago board of trade, shows the stocks of wheat and corn in store at the principal points of accumulation on the lakes on March 14, 1896:

	Wheat, bushels.	Corn, bushels.
Chicago	19,388,000	4,983,000
Duluth	12,095,000	113,000
Milwaukee	420,000	2,000
Detroit	292,000	13,000
Toledo	707,000	829,000
Buffalo	1,492,000	89,000
Total	34,394,000	6,029,000

As compared with a week ago, the above figures show at the several points named a decrease of 231,000 bushels of wheat and an increase of 575,000 bushels of corn.

On March 14, there was afloat at Chicago 512,000 bushels of wheat, 5,464,000 bushels of corn and 881,000 bushels of oats; at Buffalo, 203,000 bushels of wheat, 223,000 bushels of oats and 208,000 bushels of barley; at Duluth, 512,000 bushels of wheat; and at Milwaukee 176,000 bushels of wheat and 120,000 bushels of oats.

Secretaries of the war and navy departments have reached a decision as to arrangement of the stars in the flag when July 4 comes and an extra star is added to represent Utah. The arrangement consists of six rows with eight and seven stars alternating, the first star in the second, fourth and sixth rows being dropped, leaving seven in each of these rows.

In General.

In an article on "American Light-House Service," in St. Nicholas for March, Lieut. John M. Ellicott, U S N., tells of a buoy which once got adrift in New York harbor, made a trip to Europe in six weeks and was picked up off the coast of Ireland, where it is now moored in commemoration of its voyage.

A statement from the Cramp Ship Building Co. for nine months ending January 31, 1896, shows gross receipts of $3,817,494 and expenses, including taxes, insurance and sinking fund, of $3,534,698, leaving a surplus of $273,795. No dividend is to be paid, however, as the management announces that it has been found necessary to enter into an arrangement to fund the floating indebtedness of the company to the extent of $1,500,000, payable at the rate of $50,000 a month beginning with the first of August next. It is expected to resume dividends before the end of the current year.

Emperor William of Germany on Feb. 28 gave an audience to Col. Ludlow, military attache of the American embassy in London, who has been inspecting the Corinth and North Sea canals. The meeting was in response to an invitation from the Emperor, who requested Col. Ludlow to come from Kiel to meet him. He is receiving every facility at the disposal of the military authorities in the pursuit of his mission of inspection and is the recipient of the exceptional courtesy and honor of being permitted to inspect the artillery drills, the military school, and, in fact, all of the details of the German army.—Army and Navy Journal.

The construction of four battleships and fifteen torpedo boats is recommended by the house committee on naval affairs. This is the most liberal allowance that has been recommended for an increase in the navy since the war. Congress is against large appropriations for any purpose, but the war talk of the past several months may have some influence in this instance. The battleships are to be of 11 000 tons each and not to cost more than $3,750,000 each, exclusive of armament. Five of the torpedo boats are to have a speed of 26 knots and to cost within $850,000 each; the other ten are to have a speed of 20 knots, and their cost limit is $800,000 each.

Trade Notes.

A contract for extra dock equipment at Conneaut has been closed with the King Bridge Co. of Cleveland. Four new hoisting and conveying machines are to be erected. They will be completed about June 1.

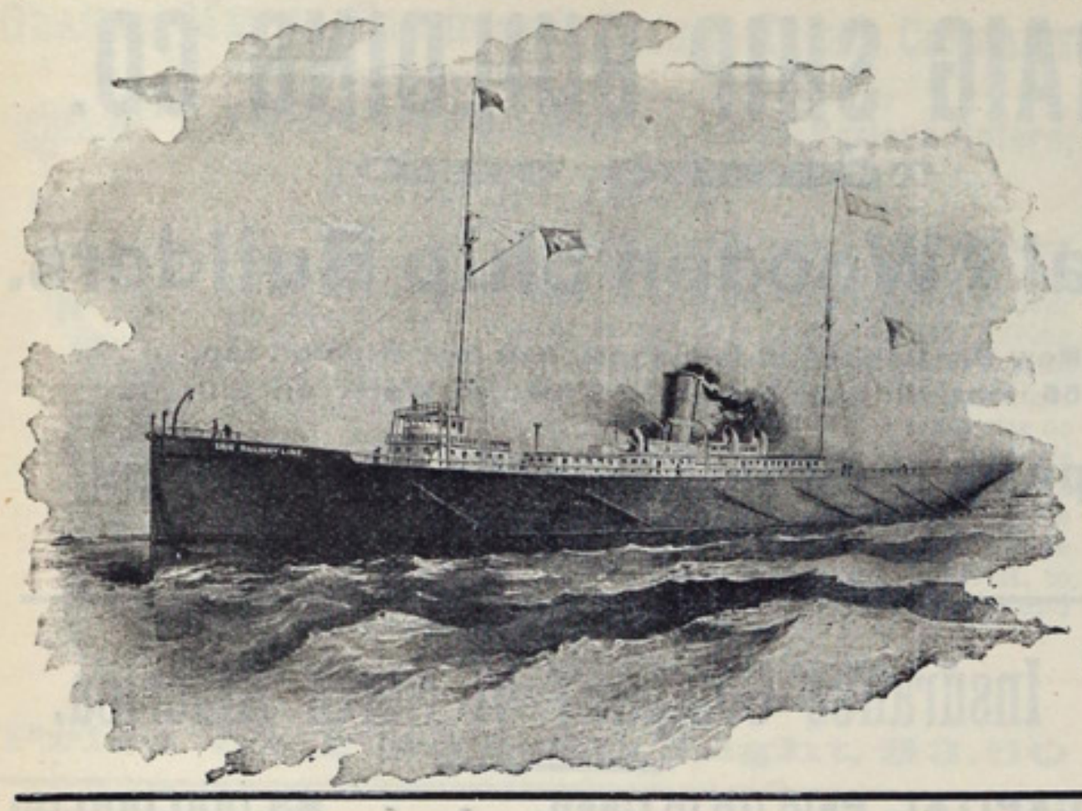
Most of the owners of steam yachts in New York and other eastern cities who have been using small steam tenders are now discarding them for naptha launches. The Gas Engine & Power Co., Morris Heights, New York, report an unusually large number of orders for launches of this kind.

The Buffalo Forge Co., manufacturers of blowing apparatus of all kinds, are constantly in receipt of letters from steamboat owners, heads of churches, schools and other institutions expressing satisfaction with their fans. Copies of several letters of this kind have been submitted to the REVIEW recently.

Mr. Ruben Foster of Baltimore says in a letter to H. G. Trout, Buffalo: "The propeller wheels furnished by you for our steamers Baltimore and Charlotte have proven very satisfactory. I have directed our superintendent engineer to duplicate them, so that in case of accident we would always have on hand a spare wheel of your make."

Contracts recently completed by the Berlin Iron Bridge Co., of East Berlin, Conn., are as follows: Casting shop and machine shop for Randolph & Clowes, Waterbury, Ct.; car house, engine room and boiler house for the Bergen County Traction Co. at Fort Lee, N. J.; steel tube plant including power house, accumulator house, coal storage, etc., for the Pope Manufacturing Co., Hartford, Ct.; two bridges for the American Sugar Refining Co., New Orleans, La.; power house and boiler plant for the Hackensack Gas & Electric Co., Hackensack, N. J.; large foundry for the Bagley & Sewall Co., Watertown, N. Y.; large machine shop for the Granger Foundry & Machine Co., Providence, R. I.; iron bridge consisting of five spans of 200 feet for Penobscot County, Me.; car shed for the Third Avenue Railway Co., Harlem River, N. Y., forge shop for Pratt & Whitney Co., Hartford, Ct.; three large buildings for the Standard Oil Co., Constable Hook, N. J.; storage house for Bradley & Hubbard, Meriden, Ct.; large extension to a producer house for the Solvay Process Co., Syracuse, N. Y.

OFFICE of the Light-House Engineer, Eleventh District, Detroit, Mich., March 16, 1896. Proposals will be received at this office until 3 o'clock P.M. of Thursday, the second day of April, 1896, for the construction and delivery of the metal work for the La Pointe Light Tower, Wisconsin. Plans, specifications, forms of proposal, and other information may be obtained on application to this office. The right is reserved to reject any or all bids, and to waive any defects. M. B. Adams, Major, Corps of Engineers, U. S. A., Light-house Engineer.



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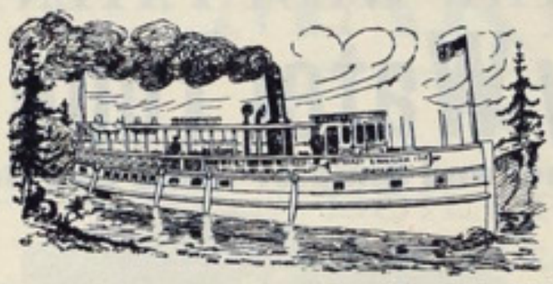

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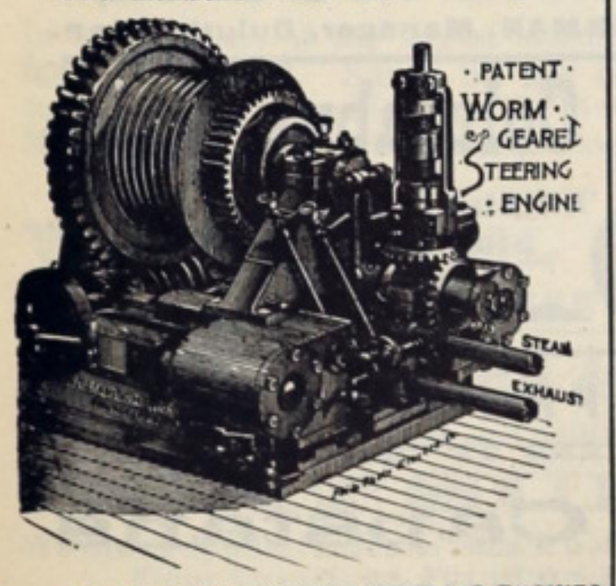

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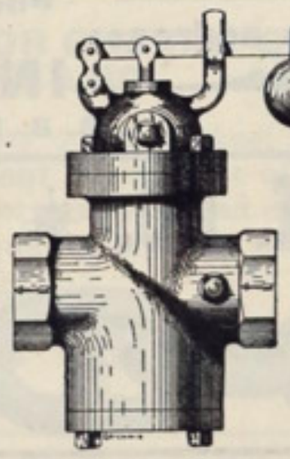

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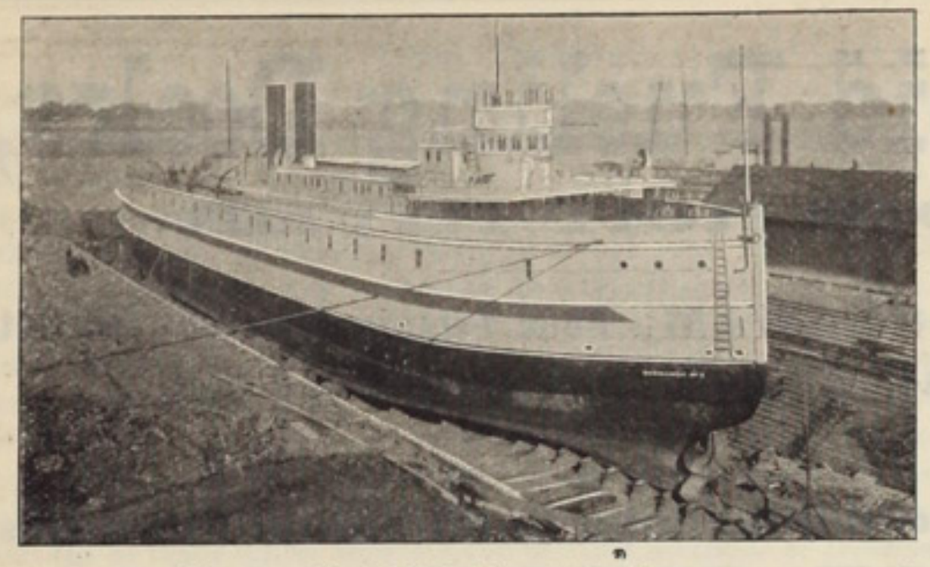

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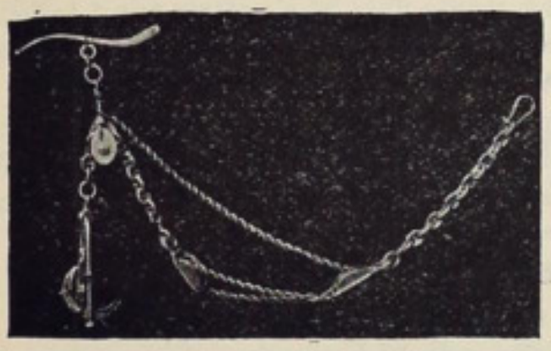

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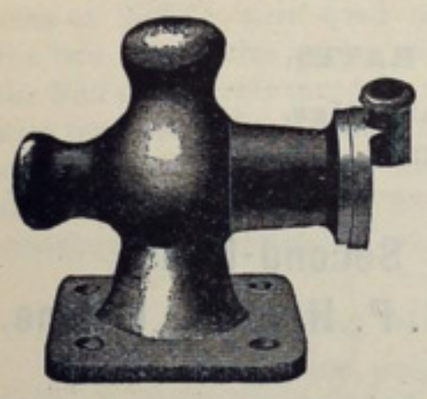

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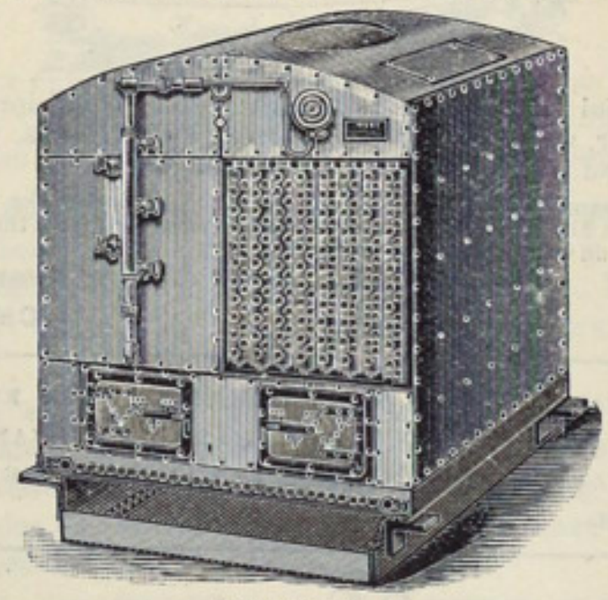

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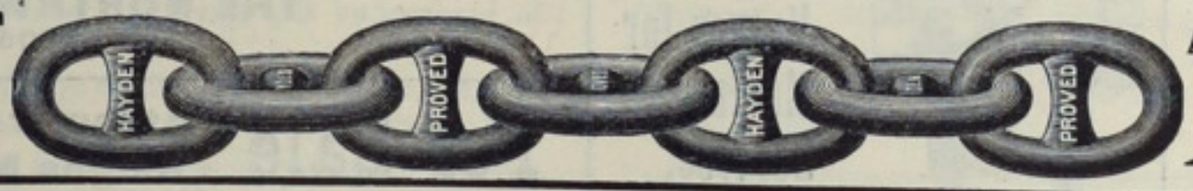

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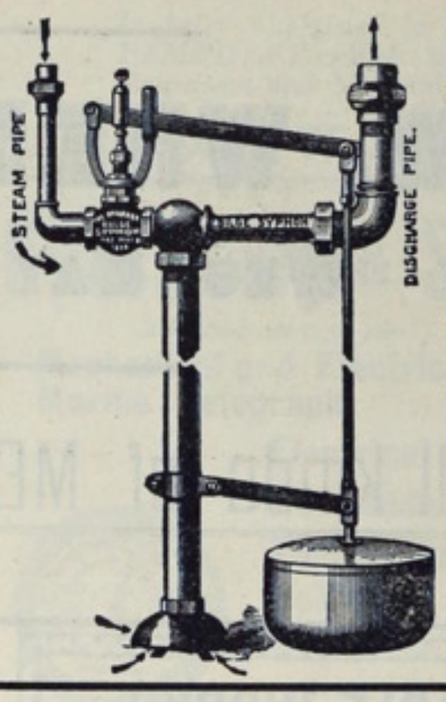

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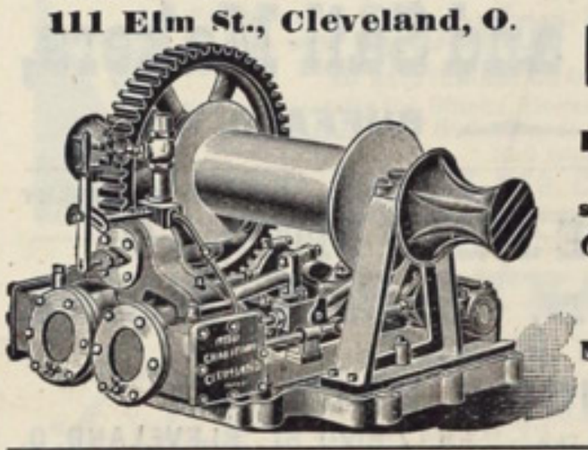

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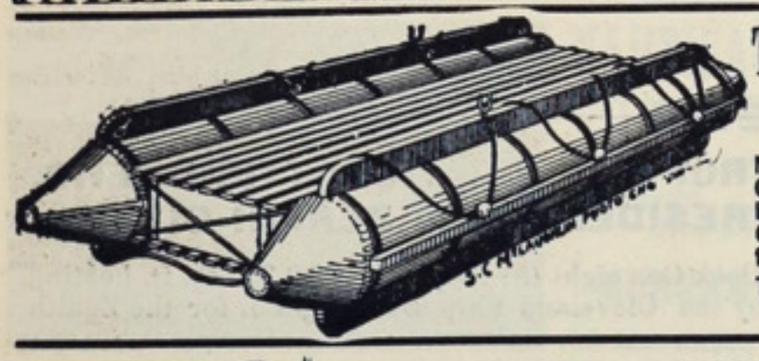

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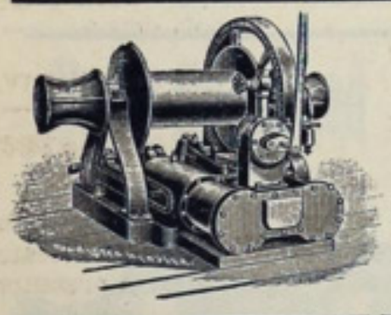

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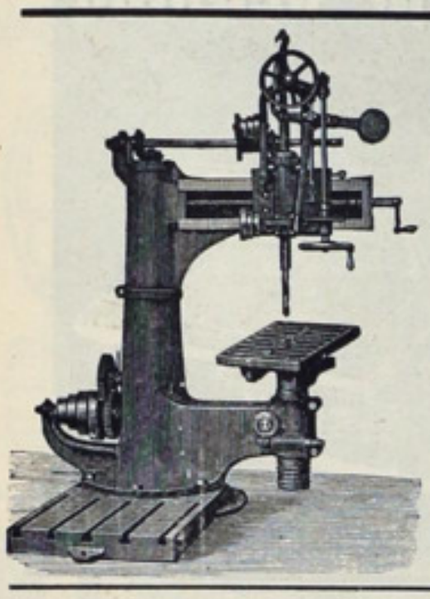

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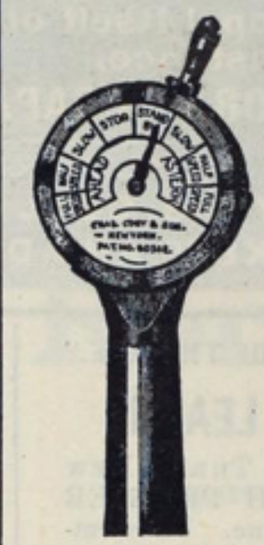

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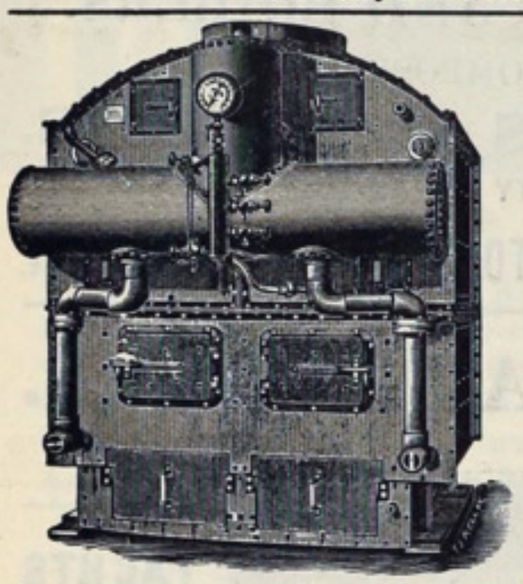

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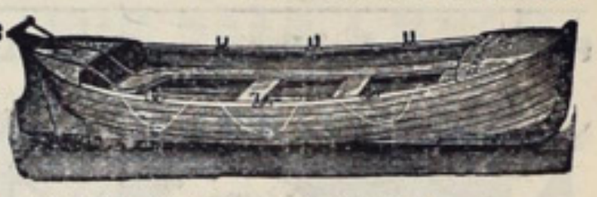

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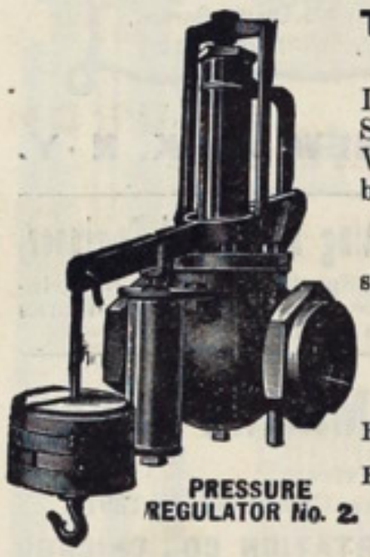

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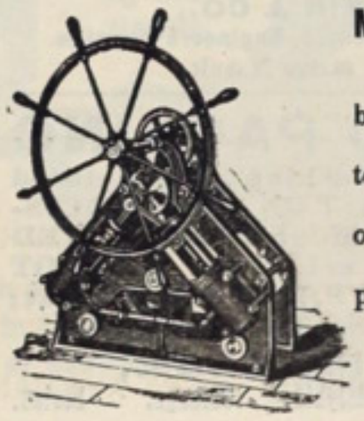

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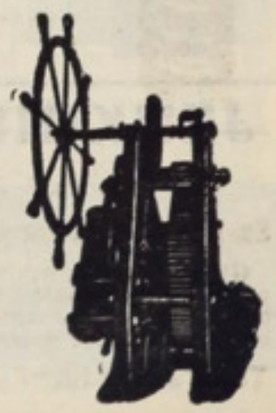

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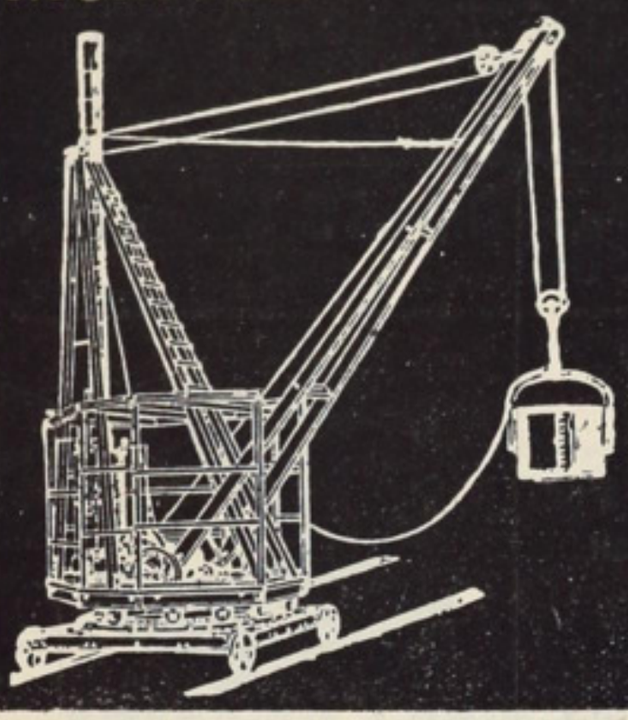

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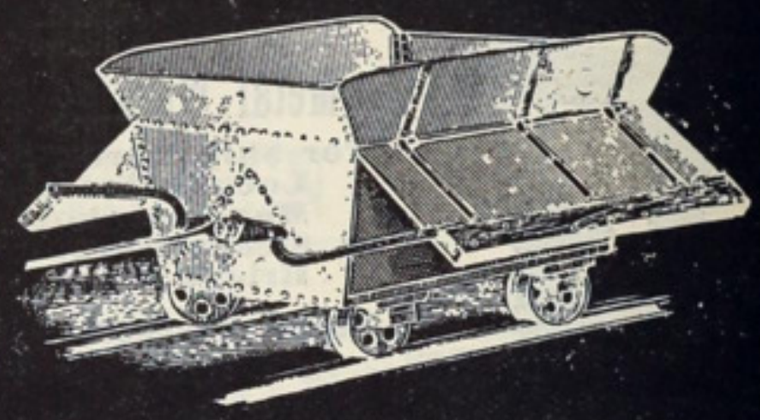

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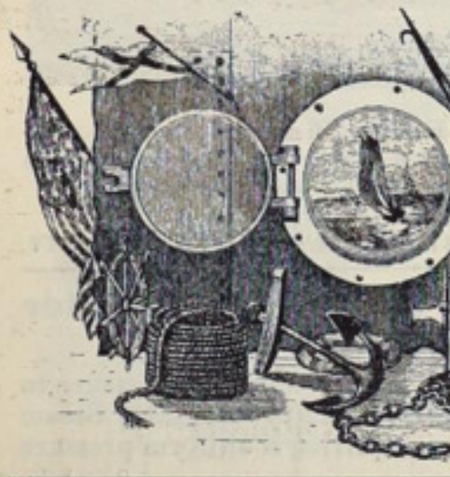

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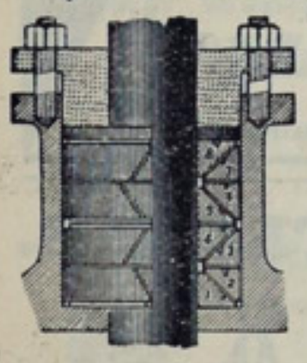

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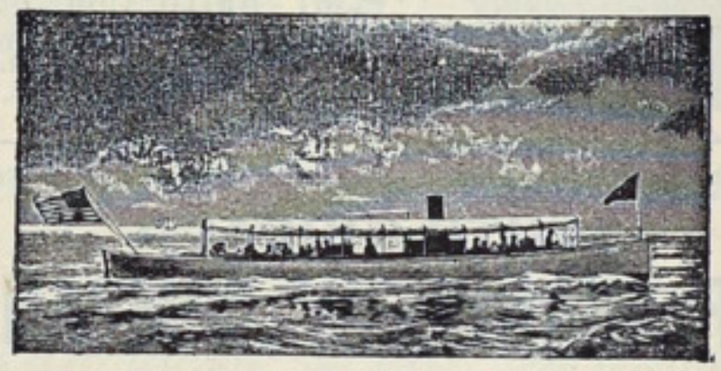

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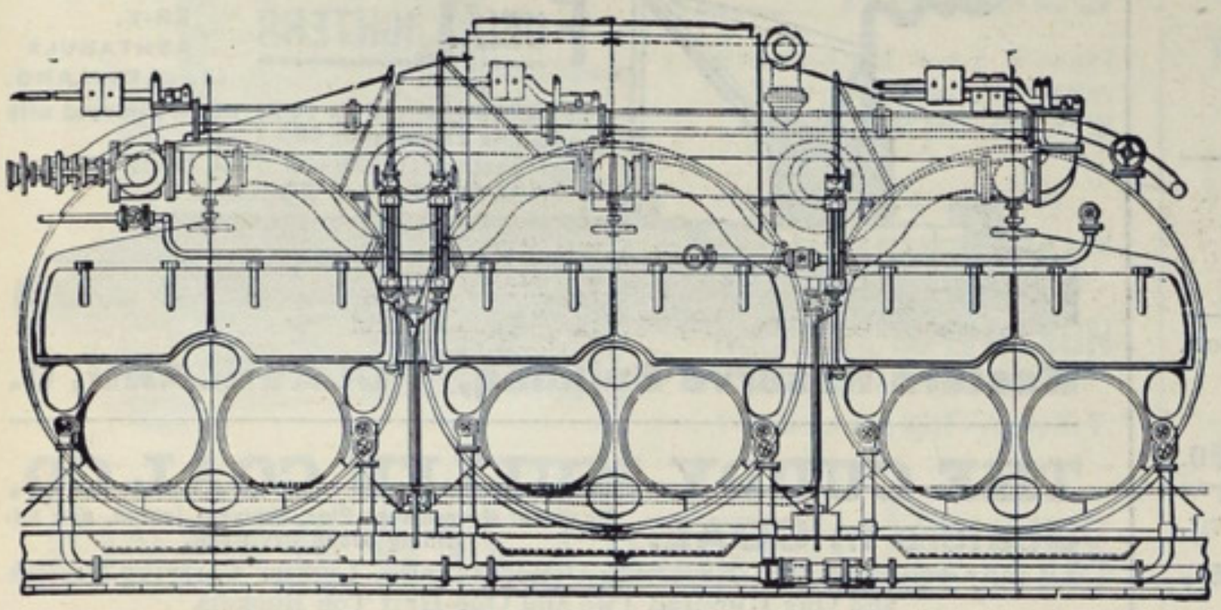

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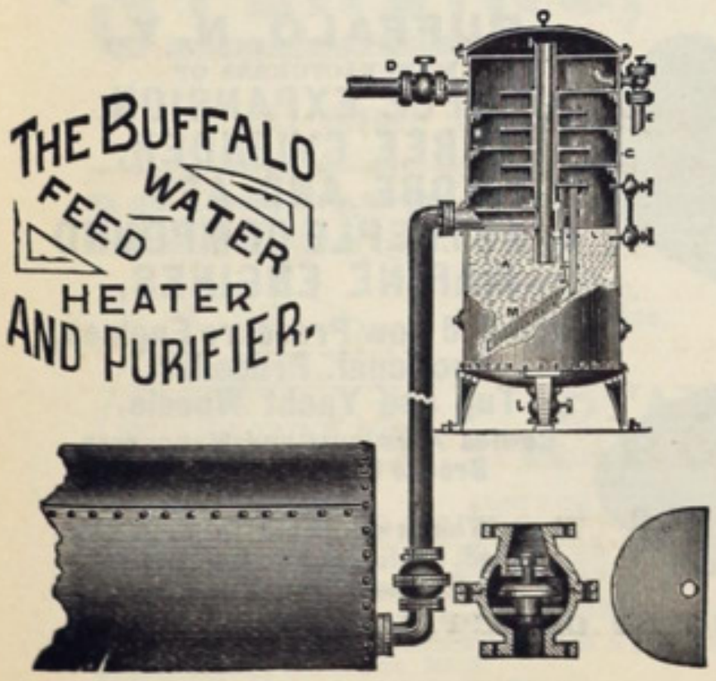

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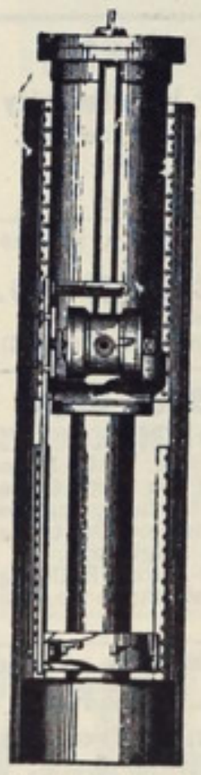

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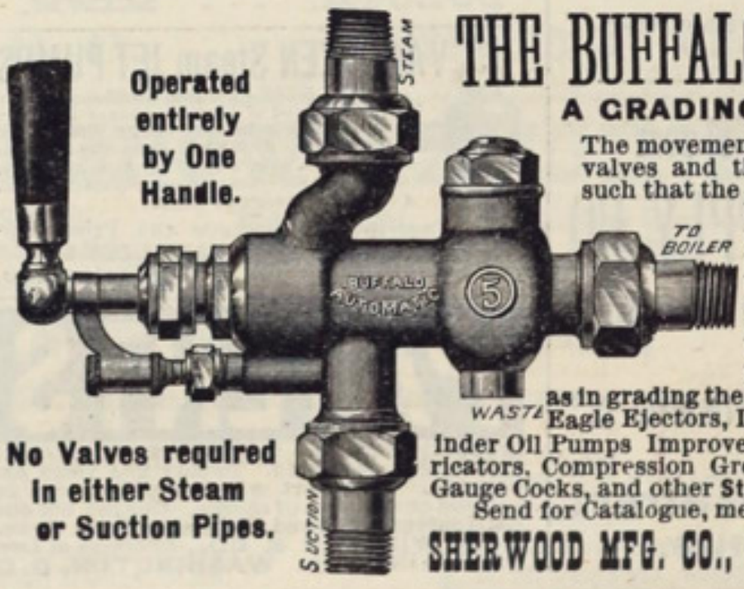

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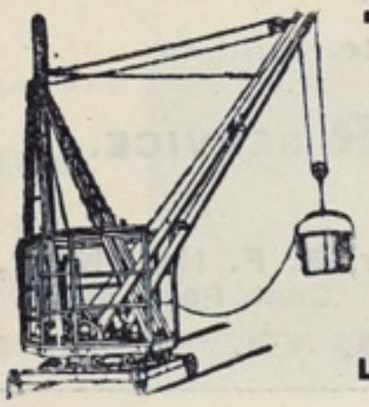

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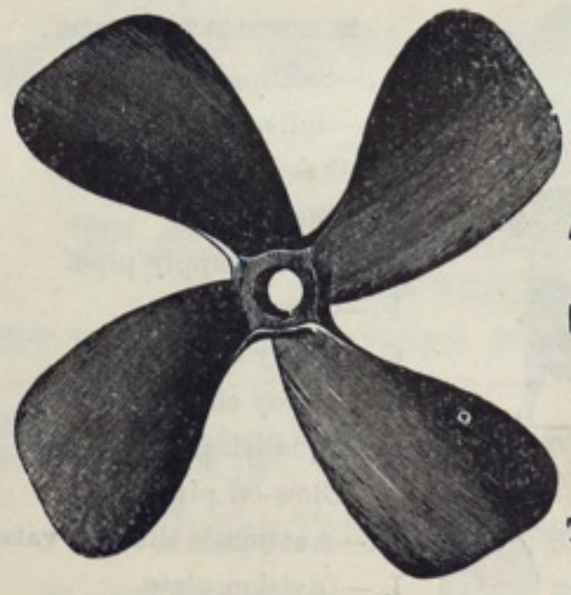

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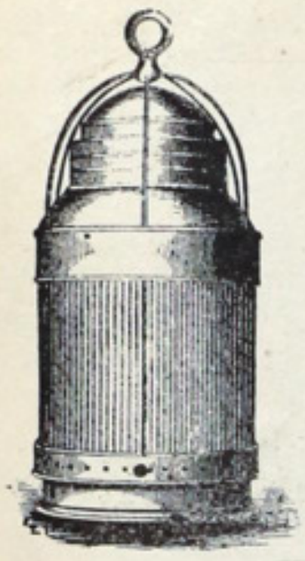

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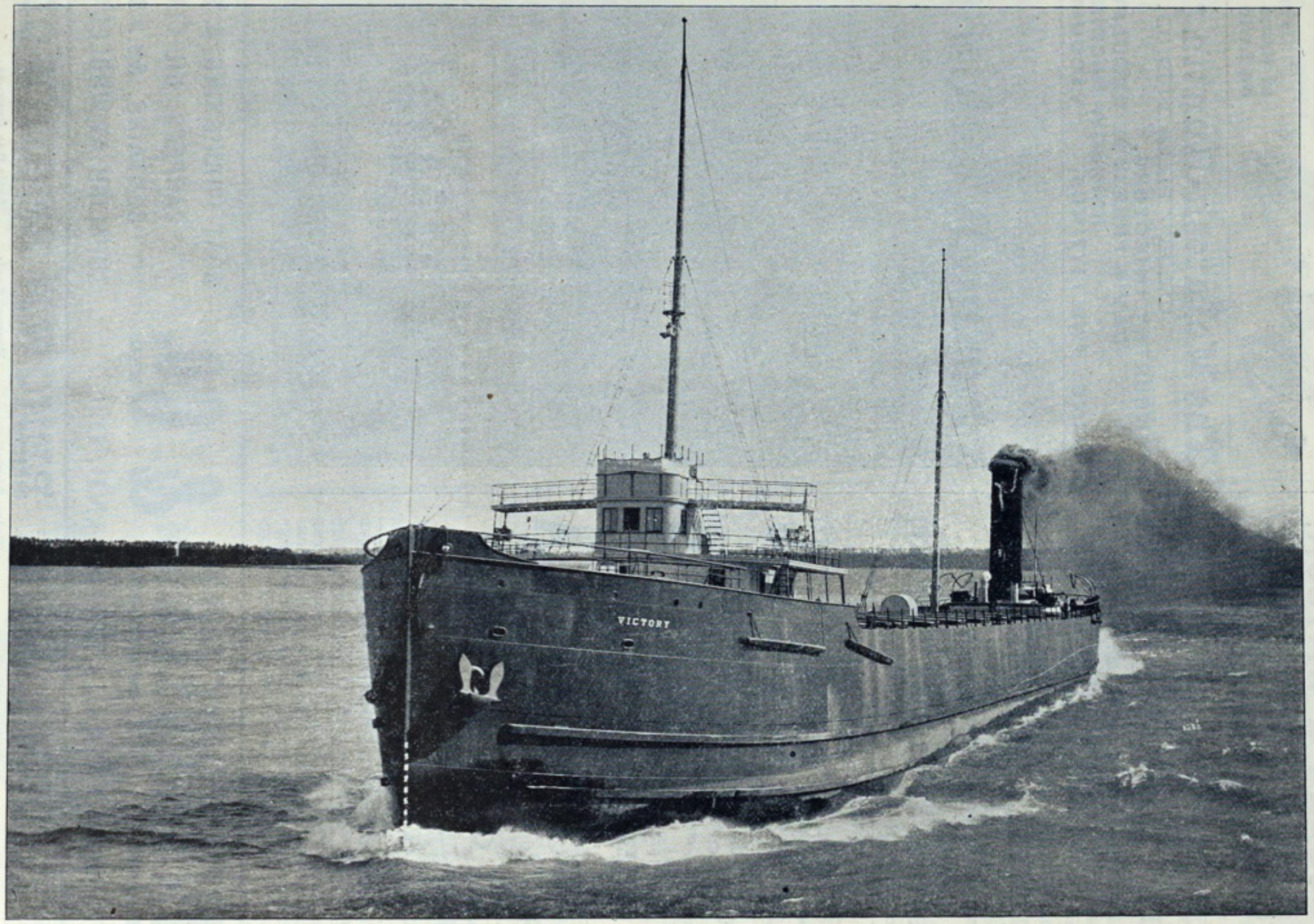

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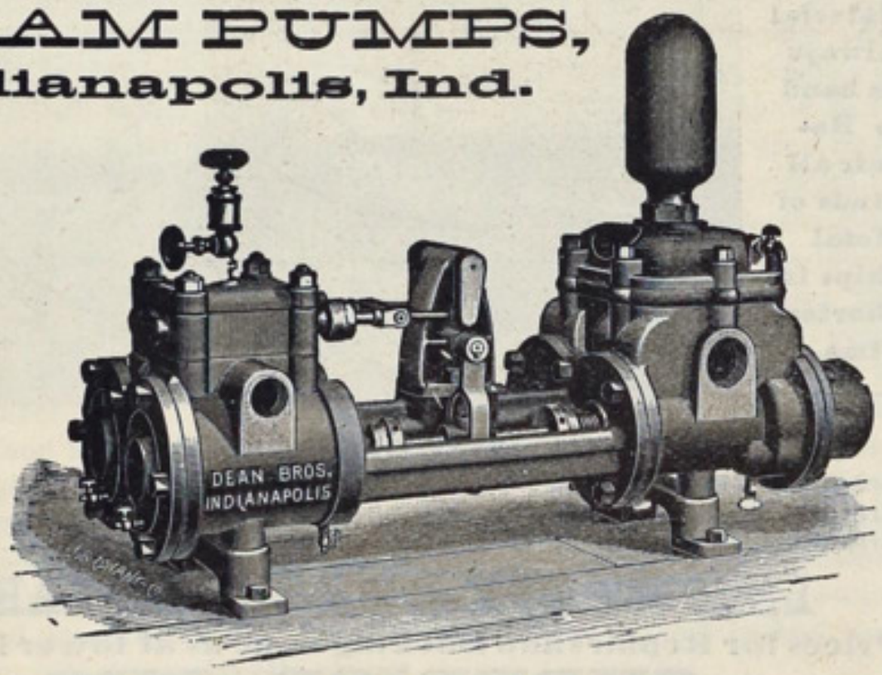

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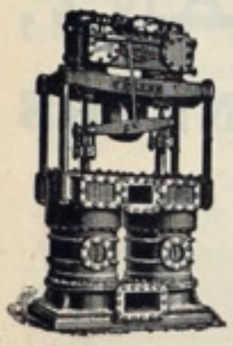

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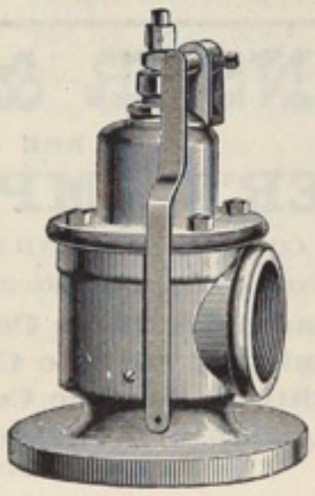

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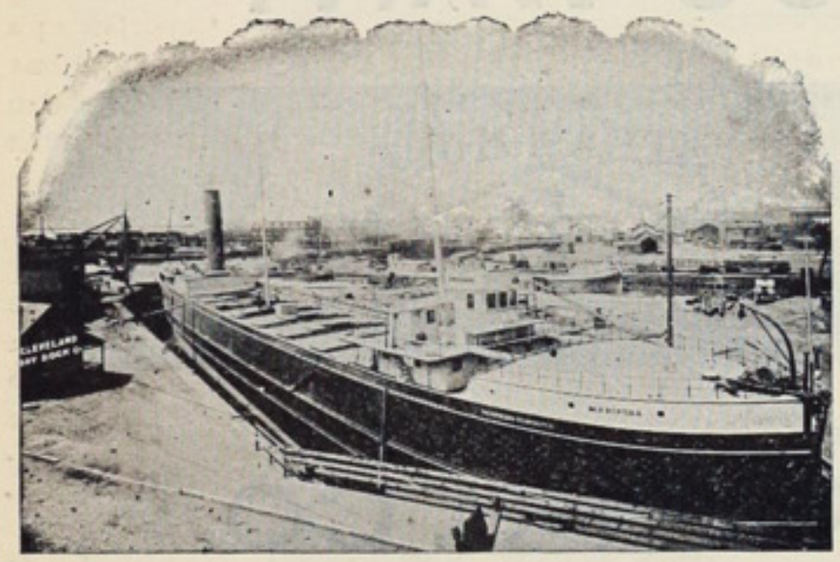

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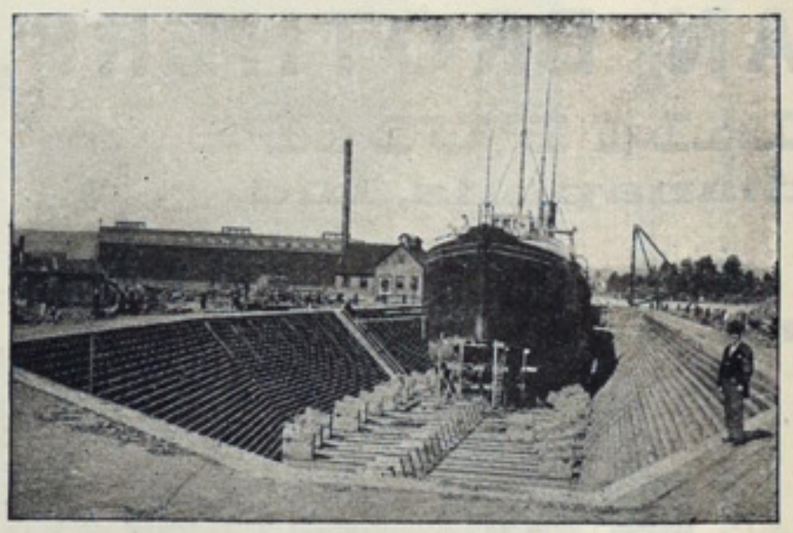

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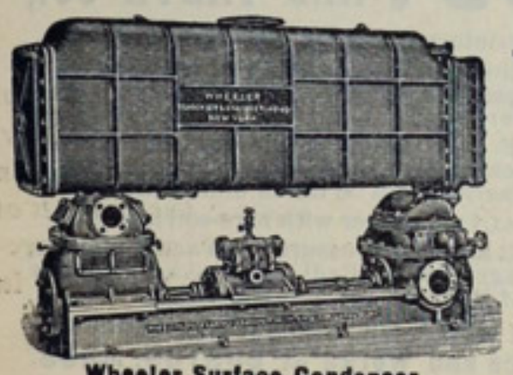

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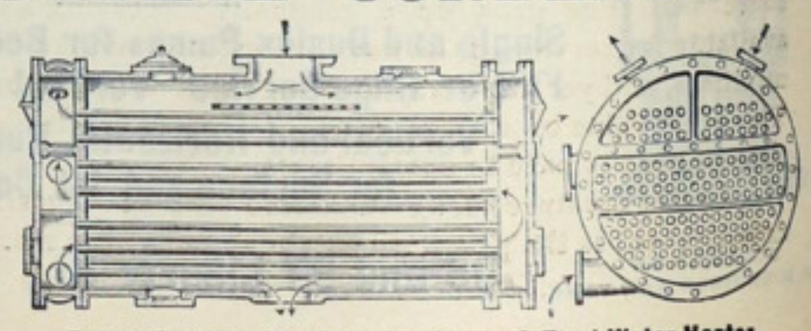

Patent Combined Surface Condenser & Feed-Water Heater.